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PROGRESSIVE MEDICINE.

A QUARTERLY DIGEST OF ADVANCES, DISCOVERIES,
AND IMPROVEMENTS

IN THE

MEDICAL AND SURGICAL SCIENCES.

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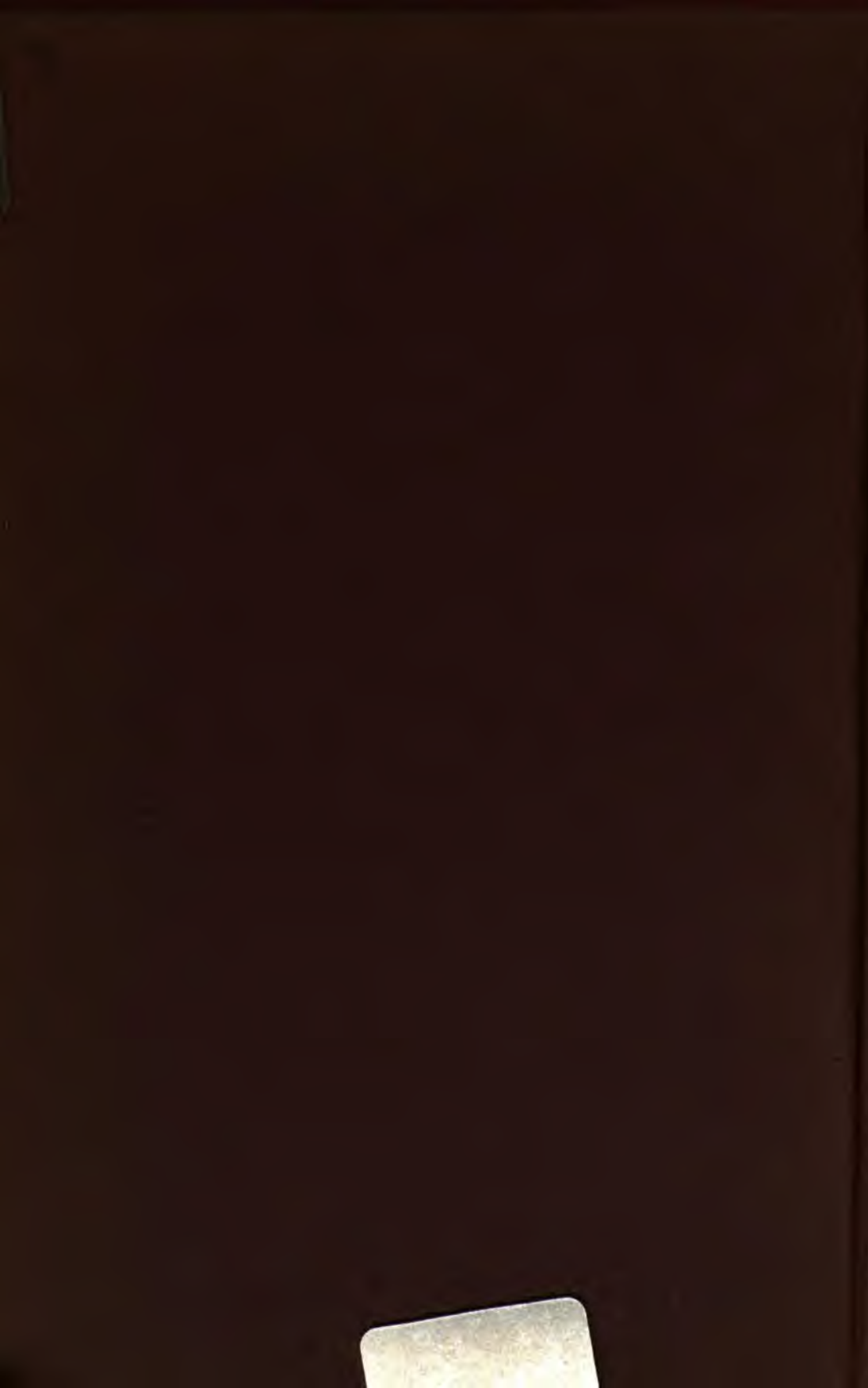
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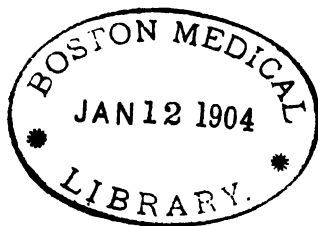
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PROGRESSIVE MEDICINE.

SEPTEMBER, 1903.

DISEASES OF THE THORAX AND ITS VISCERA, INCLUDING THE HEART, LUNGS, AND BLOODVESSELS.

By WILLIAM EWART, M.D., F.R.C.P.

PULMONARY TUBERCULOSIS.

The Formation of a Joint to the First Rib has, according to W. A. Freund,¹ an important influence upon the healing process in some forms of phthisis. He has found that persons possessed of a free joint to their manubrium have invariably healthy apices. A joint to the first rib would in a yet greater measure contribute to the activity of the summit of the lung and prove most favorable. Freund recommends in cases of relapsing affection of the apex a division of the first costal cartilage, which he regards as a simple and harmless operation as set forth in Garré's² paper on the "Surgical Treatment of Pulmonary Affections."

The respiratory advantage which is gained by a mobility of the sternal angle is pointed out by Rothschild.³ He suggests that this may be defective in those predisposed to phthisis, and he has recognized the relative absence of mobility in many subjects inheriting a predisposition.

Surgical Emphysema is an unusual mode of death in phthisis. J. F. Hodgson⁴ reports a case of chronic tuberculosis which terminated in acute surgical emphysema, owing to penetration of a cavity by a fragment of the third rib which had become weakened and fractured by an extension of inflammation from the pleura. Death followed in two hours and a half. The emphysema was general and extreme.

¹ Therap. Monats., June, 1902.

² Mitth. aus den Grenzgeb., 1902, Band ix., Heft 3.

³ Berliner klin. Wochenschrift, March 2, 1903.

⁴ Lancet, July 19, 1902.

Gastric Dilatation from Overfeeding in Tuberculosis is an occurrence to which we cannot shut our eyes. N. Bardswell,¹ who considers it urgent, in a paper before the British Medical Association concludes with a warning against the increasing risk entailed upon the patient by overlooking the gastric failure, or by persevering with the faulty method.

The Psychical Factor in pulmonary tuberculosis has attracted the attention of various observers. Engel² dwells upon the emotional tendency so often present, and apt to be revealed not only in social but in professional transactions. This peculiarity lays the patients open to great depressions in connection with the fluctuations of their condition, which they are too much given to noticing.

Further analysis has been brought to bear by Felix Regnault and other French observers upon the study of the mental state of phthisis. The "spes phthisica," that supreme delusion of the dying consumptive, is not the only characteristic of mental abnormality. In a discussion on the psychology of the consumptive patient, in which F. Regnault, J. Voisin, M. Bérillon, and M. Lépinay took part, various psychological manifestations were dwelt upon. Regnault traces in the early stage relative optimism and buoyancy, with hyperexcitability, egoism, and sentimentality. This optimism is a help in treatment, but too often it may be a danger. So also is the sexual hyperexcitability present in many subfebrile cases. Like pyrexia supervening in cases of low arterial tension, tuberculosis tones up those who suffer from any torpid affections, such, for instance, as myxœdema. Jules Voisin thinks he is able to diagnosticate gastrointestinal from pulmonary tuberculosis by the relative depression of subjects of the former in contrast with the much brighter disposition of those with the pulmonary affection.

The same psychical peculiarities belong, according to Lépinay, to tuberculosis in animals, and are especially noticeable in their sexual behavior.

Vacillation and loss of power of application are familiar features in most of our patients. Bérillon attributes this to a state of "hypersuggestibility."

The Thermometer as a Guide to Diagnosis and Treatment. For purposes of diagnosis the temperature record, as pointed out by R. W. Philip,³ though usually descriptive of the case, is not in its details always trustworthy. The rule is for any pyrexia to yield rapidly to open-air treatment, but considerable exceptions occur. It thus comes about that continued apyrexia may disguise a condition by no means quiescent. This shows that tuberculosis *per se* does not necessarily

¹ Lancet, August 2, 1902, p. 324.

² Münchener med. Wochenschrift, August 19, 1902.

³ Practitioner, May, 1902.

involve pyrexia, and that in many cases, if not in all, there is some further cause, which it is imperative to trace and correct.

The same teaching is put before us by Trevelyan.¹ No chart can be stated to be absolutely typical of phthisis. The temperature chart may be influenced (1) by intercurrent affections, (2) by extension of the disease, (3) by complications, and (4) by artificial means. The presence of even slight pyrexia in suspected phthisis might be of considerable value in diagnosis. In similar cases without pyrexia, and where the examination of the sputum gave negative bacteriological results, it is quite justifiable to try tuberculin in minimal doses.

THE REGULATION OF EXERCISE. In phthisis, owing to its peculiar thermotaxic reactivity, we possess special means of apportioning the task to the individual capacity in addition to the patient's own feelings or aspect. It is to be noted, however, that a slight rise in the rectal temperature occurs in healthy subjects after sharp exercise. This point has been carefully tested by Schröder and Brühl in their investigation into the thermometry of exercise.² They found that this normal rise disappeared within half an hour—contrary to that which often happens in phthisis. Another important subject in their investigation was the study of the relation of exercise to the presence of albumose in the urine.

According to Penzoldt,³ a rectal temperature of 38° C. (100.4° F.) is a stringent indication for rest in bed. All sanatorium thermometry should be rectal. For a minimum of two months after the initial fever or after any febrile exacerbation patients should refrain from all avoidable movement and cultivate absolute repose. Patients leaving for a sanatorium must be spared the exertion of packing and all flurry in travel. The amount of exercise must be prescribed according to the thermometric result. Patients with the "repose temperature," or "average evening temperature" of phthisis (37.5° C.; 99.5° F.), should be kept under careful watch, although a rise to 37.8° C. (100° F.) is often enough produced in healthy subjects. This or any higher rise in the invalid should be regarded as indicating overexertion and the need to shorten the period of exercise. The pulse and respiration are also valuable guides. They might be capable of registration during exercise.

F. W. Burton Fanning and S. G. Champion's paper⁴ upon comparative thermometry in phthisis is an important contribution. Their experience is to the effect that the rectal method is in all circumstances reliable. The same remark does not apply to any other.

G. Schröder and Brühl⁵ raise the question whether the elevation of

¹ British Medical Journal, January 31, 1903.

² Münchener med. Wochenschrift, August 19, 1902.

³ Ibid., Band I. p. 1.

⁴ Lancet, April, 1903.

⁵ Münchener med. Wochenschrift, August 19, 1902.

the rectal temperature after exertion is to be regarded strictly as a fever or simply as a peculiar temperature reaction, as it is often observed in the healthy. If albumose were to be traced in the urine this would support the "pyrexial" view. In a subsequent communication they reported that in those cases in which there was a marked discrepancy between the rectal temperature and that of the mouth albumose was found in the urine.

Erwin Franck's¹ exhaustive paper recommends the rectal method as the only reliable one. The fever limit lies for rectal temperatures at 37.4° C. (99.3° F.).

Sanatoria. THE MODEL SANATORIUM. Germany, the land of sanatoria, will have to look to its laurels. Its latest effort, the Wehrawald Sanatorium, made so prominent to the English-speaking world by Sir Lauder Brunton's advocacy, has been seriously criticised on the points of height and overpopulation, and particularly of ventilation. Meanwhile the King's sanatorium prize competition, an open and most fair contest, ended in the success of three English essays over the experienced competitors whom Germany could offer. Both the medical essay by Dr. Arthur Latham and the plans by Mr. William West stand out as first-class work.

This is likely to be improved upon by the Phipps Institute in Philadelphia, which is intended by its founder to be a place for the advanced study of the problem of tuberculosis as well as a hospital for consumptives.

One of the chief contrasts between the German and the English plans is the difference between the number of floors. Although a larger site is necessitated, the limitation to two stories must commend itself to the sanitarian.

SANATORIA FOR THE POOR. The need for adequate sanatorium treatment for the consumptive poor is everywhere receiving attention. Some of the principal Friendly Societies of England recently sent representatives to Germany in order to study the provisions made for consumptives by the state insurance companies, and as a result, it being considered more profitable in the long run to get the people well than to support them in illness, it was decided to endeavor to make special arrangements with county and other sanatoria whereby members of the society could be admitted. Throughout the country special efforts are being made to establish this method of treatment in connection with infirmaries and other poor law institutions, and it is to be hoped that before long all ranks of life will be provided for. In Germany the latest sanatorium—the Beelitz—has been built through the Friendly

¹ Therap. Monats., May, 1903.

Societies' insurance system, and is intended for working people. The building, without being luxurious, is constructed on the best plans and is capable of containing 600 beds. In the United States active measures are also being taken.

L. F. Flick¹ has written an account of a year's work at the White Haven Sanatorium of the Free Hospital for Poor Consumptives, which was first opened on very modest lines in 1901. Since then it has rapidly grown and is now doing excellent work. Some of the different lessons to be learned from the first year's work are alluded to. It is pointed out that open air and the right kind of food are the primary requirements, all comforts being secondary in importance. Another important point noted is that for successful sanatorium work the different patients should be carefully classified according to the stages of the disease.

Flick is in favor of separating the pyrexial and hopeless cases from the incipient and the better class of chronic cases. He impresses again the importance of an early diagnosis, which is too often delayed. Incipient cases recover rapidly and remain well; late cases are slow to mend and quickly relapse, and if too far advanced they make no progress even at sanatoria.

R. Kobert² enters with full detail into the difficulties in the selection of patients for sanatoria, and into the best methods to follow in their admission.

THE COST OF SANATORIA. It may be of use to mention the cost of various sanatoria per bed, as considerable differences are apparent between leading sanatoria. For the poor, sanatoria have been built at the cost of \$1250 to \$1500 per bed. Dr. Heron, who is an advocate for light temporary rather than permanent and solid buildings, considers that \$1000 to \$1500 per bed ought to be sufficient money for quite first-class sanatoria; but the actual figures run much higher:

	<i>Cost per bed.</i>
The Anstalt, at Nordrach	\$2500
The Frimley Sanatorium (Brompton Hospital)	2500
The Manchester Sanatorium	5000
The Beelitz Industrial Assurance, for 600 patients	3752

These figures do not include the cost of the site.

SPECIAL DISPENSARIES FOR TUBERCULOSIS, such as illustrated by the Emile Roux Institution at Lille and by that recently established at Havana, are, as shown by S. A. Knopf,³ an important factor in the combat of tuberculosis as a disease of the masses. They may be utilized not only as stations for relief, and as educational centres in their district, but

¹ Philadelphia Medical Journal, November 8, 1902.

² Münchener med. Wochenschrift, August 19, 1902.

³ New York Medical Journal, March 28, 1903.

also as "distributing houses" for the supply of patients to the sanatoria and seaside homes.

SANATORIA FOR THE TUBERCULOUS INSANE. Open-air treatment for tuberculosis in the insane has been inaugurated in New York by A. E. Macdonald, who has invented a system of tent life, with gratifying results. This tent life has also been practised for ordinary patients in Arizona, and it is said that the results bear a marked contrast to those obtained from treatment in permanent buildings. This method of "tent life" is really only another variety of the "hut" or "chalet" system of treatment which is carried on extensively in England and elsewhere.

THE RESULTS OF SANATORIUM TREATMENT. *Permanent results* are reported in encouraging numbers by F. Reiche,¹ who deals with observations on 1773 cases of admission. He is unable to credit sanatorium treatment with much power to cure, for complete recoveries are rare; but improvement such as to enable patients to resume work for a time, and even permanently, is common. This confirms the experience of all physicians attached to sanatoria for the poor.

The percentage of recoveries reported by Meissen² from the Hohenhonnef Sanatorium is creditable. Of 1731 cases, 208 have remained well for intervals between three and eleven years. Some, of course, have relapsed, but apparently owing to poverty or overwork.

OBJECTIONS TO SANATORIA. The controversy between Hammer³ and E. Meissen⁴ as to the use of sanatorium treatment would have possessed greater value if the statistical returns used by Hammer had been larger. From a study of 127 cases he concludes that equally good results have been obtained without sanatorium treatment as with it. He believes that sanatorium treatment should be reserved for selected cases. Many others are amenable to much less expensive treatment by the adoption of hygiene at home and by the use of day resorts near home.

E. Meissen,⁵ in his reply to Hammer, dwells upon the importance of early diagnosis and treatment. The ordinary clinical methods are quite sufficient for the purpose—the tuberculin test being apt to prove too much or too little, and the agglutination test not being sufficiently reliable. He thinks patients, for their own safety, should be told that they are threatened with the disease or are the bearers of the undeveloped germs. There is no cruelty, but only kindness, in this candor.

Volland's article⁶ on the open-air treatment of phthisis is one of very few which are not unreservedly in favor of the new doctrine. He believes in a more protecting treatment, and disapproves of continuous

¹ Münchener med. Wochenschrift, August 19, 1902, No. 33.

² Therap. der Gegenwart, March, 1902.

³ Münchener med. Wochenschrift, July 1, 1902.

⁴ Ibid., August 19, 1902.

⁵ Ibid.

⁶ Therap. Monats., December, 1902.

exposure to the weather, as he formerly disapproved of the hill-climbing and still disapproves of the forced-feeding craze. He is the champion of moderation, and deplores that the treatment at "Heilstätten" should have adopted an extreme and therefore erroneous method. Much of his argument is based upon Hammer's demonstration of the remarkable and unexpected fact that polyclinic cases are far more successful than sanatorium cases, although they are not, as the latter, picked ones. The fact is simply that they are treated on lines of common-sense. He dwells upon the remarkable curative property of the Alpine air, which allays bronchitis, stops the cough, dries up the catarrhal secretion, and improves the patient's nutrition so long as nature's efforts are not marred by some artificial and damaging interference based upon theory.

Albert Robin's objection to sanatoria is of an economical order. He regards the disease as practically uncured by sanatoria. The money were better spent upon its prevention, which is so easily obtained by open air, abstinence from alcohol, and complete rest of mind and body. Two tests have been applied by Robin and Binet for the detection of a lurking predisposition: (1) an excessive respiratory consumption, and (2) an excessive daily demineralization. So long as the duties of prevention and of protection remain unfulfilled, expenditure upon the luxury of sanatoria is not warranted.

THE OPEN-AIR TREATMENT OF SYPHILIS interests us not only in connection with the developments of a method which is so closely identified with tuberculosis, nor alone because it is advocated from Davos, but because the treatment has in fact already been applied to a number of syphilitics, only much too late, after they had become infected with tuberculosis. If, as alleged, the predisposition arising from syphilis could be mitigated or removed by an earlier recourse to the method, much direct service will be accomplished in the prevention of phthisis. Assuming that the estimate—gathered from various sanatoria and hospitals on the Continent—of 30 to 50 per cent. syphilitics among phthisical men is pitched too high, and that the predisposition is not so great as it would appear, the fact would still remain that if any person otherwise predisposed to phthisis were submitted, because of syphilis, to an open-air course, that patient might thereby be saved from the threatening danger.

E. H. Douty¹ thinks, therefore, that all the advantages of the open-air treatment may be equally well applied to syphilis. The essentials are open air, rest, high feeding, graduated exercise, and if possible a bright, dry, bracing climate, with the addition of small doses of mercury, maintained for one or two years, for in the Alps Douty finds that

¹ British Medical Journal, February 28, 1903.

a little mercury goes a long way. He believes that syphilis plays an important part in the etiology of phthisis, and from inquiries among Continental sanatoria it would appear that the proportion of syphilitics among the phthysical men ranges between 30 and 50 per cent. Douty does not consider that any means will be found effectual for stamping out tuberculosis until steps are also taken for dealing with syphilis. The treatment of syphilis he considers should consist of certainly one and if possible two years of open-air life. He recognizes the impossibility of obtaining such lengthy treatment for the working classes, but thinks they might still often obtain three or four months. Compulsion is a manifestly utopian idea at present beyond the range of practicability, but Douty thinks that this policy could save half a million deaths yearly in Europe.

The Treatment of Pulmonary Tuberculosis. Important instalments of the hygienic treatment are contained in Nahm's¹ aphorism that the prognosis of phthisis is a function of the teeth, of the stomach, and of the heart. Before admission into a sanatorium the patient should have his teeth, his alimentary canal, his larynx, and his kidneys in good order. Upon leaving the sanatorium he should find, if possible, some permanent occupation in the country. The establishment of affiliated colonies for the reception of convalescents would be of untold advantage.

Wark considers that the success of our treatment of pulmonary tuberculosis depends upon the correction of impaired respiratory movements, of an enfeebled circulation, and of a generally defective metabolism, especially in relation to the assimilation of fats; and he thinks that these defects can best be corrected by a combination of medical and mechanical treatment.

THE "LIGHT" TREATMENT. The treatment of pulmonary tuberculosis by different forms of light does not appear to hold out much hope of success, although amelioration of symptoms is claimed in some cases. Gordon C. Burdick believes that radiotherapy may prove a useful adjuvant to other treatment, and bases his conclusions upon his experimental and clinical experiences in forty-three cases of tuberculosis of different parts of the body, with uniformly good results, except in one fatal case. J. W. Kime² claims some good results from concentrated actinic rays, which he believes are stimulating to the tissues and destructive to the bacteria. A. E. Sterne considers that in conjunction with ozonization the ultraviolet rays are highly beneficial in early phthisis. Soiland, in the *Southern California Practitioner* for June, advocates the Röntgen rays, and also suggests that the high frequency current might produce some effects by modifying metabolism.

¹ Therap. Monats., Berlin, May, 1902.

² Medical Record, November 1, 1902.

ENDERMIC MEDICATION. The administration of drugs through the skin is advocated by Duncan Taylor,¹ who employs this method of treatment with some success in conjunction with electricity and massage. He uses a mixture of 4 drachms of creosote or guaiacol, 1 drachm of oil of citronella, and cod-liver oil to make up 4 ounces.

Crismond² recommends rubbing 2 ounces of scented cod-liver oil into the skin every night, but he uses at the same time injections of cod-liver oil containing bromine and iodine. He also resorts to nasal sprays and nebulized inhalations. The question remains, "How much of the success reported may we attribute to the open-air treatment, which was also employed?"

SODIUM CINNAMATE BY INTRAVENOUS, INTRAMUSCULAR, AND INTERNAL ADMINISTRATION. J. Robinson³ speaks of *sodium cinnamate* as a useful drug in tuberculosis; but, in agreeing with its strong supporters, Landerer and Cantrowitz, he disclaims any idea of its being a specific. The dose should be small at first and increased only gradually. A rise of temperature after an injection is a sign that too much has been given, and the amount should be forthwith reduced. Considerably larger doses can, however, be given by the mouth (2 to 3 grains); but it has yet to be shown that any effect is then produced upon the tuberculous process. It is contraindicated in hemorrhagic cases and also where the temperature is above 101° F. Robinson concludes that the drug has no curative properties, but is useful in the treatment of symptoms.

Katzenstein⁴ gives an enthusiastic account of his favorable experience of sodium cinnamate in general practice. After their recovery none of his patients relapsed. He freely admits that he did not inject patients who could not afford abundant food and rest. His injections were *not intravenous*, but introduced into the deep muscles of the arm—an exceedingly simple and rapid method.

A. G. Mendoza's⁵ injections of 0.5 mg. ($\frac{1}{137}$ gr.) of sodium cinnamate gradually increased to a dose of 25 mg. ($\frac{1}{2}$ gr.), duly sterilized, proved to be harmless, and the results encouraging though not brilliant, owing to the nature of the cases and the limitations of the treatment.

H. Riegner⁶ also writes favorably of his experience, in nine cases, of Landerer's method as carried out with the precautions which he describes.

THE SUBCUTANEOUS INJECTION OF ARSENIC has been tried in ten cases by H. Cybulski,⁷ with a solution containing sodium arseniat., 0.2 (3 gr.); sol. acid. carbol. (0.5 per cent.), 20.0 (f3v).

¹ Lancet, October 18, 1902.

² Medical and Surgical Monitor, July 15, 1902

³ Merck's Archives, November and December, 1902.

⁴ Münchener med. Wochenschrift, August 19, 1902.

⁵ Revista med. Cubana, February 1, 1903.

⁶ Münchener med. Wochenschrift, November 18, 1902.

⁷ Ibid., August 19, 1902.

The injections were continued for twenty days with gradually increasing amounts until the entire syringe-ful was injected at a dose. The temperature was lowered under this treatment and the body weight increased, but no improvement took place in the lung.

ICHTHYOL is found by Errico de Renzi of decided use for diminishing bronchial catarrh, or where there are intestinal symptoms ichthoform may be found better. The same author also recommends salicylate of soda for pyrexia.

V. C. Vaughan¹ thinks nucleinic acid, given either hypodermically or by the intravenous method, of use as a tonic in the early stages, but does not recommend it for later periods of the disease.

GEOSOTE, the *valerianate of guaiacol*, is lauded by Kühn² as beneficial in the early stages. Good results have been recorded by combining this treatment with the intravenous administration of hetol. The unpleasant taste of the geosote may be overcome by prescribing it in the form of capsules.

Geosote has been used by A. Kühn,³ of Rostock, in capsules of 0.2 to 0.4 gramme (3 to 6 grs.), or in drops with equal parts of tincture of gentian. He finds it free from drawbacks and an excellent tonic. Several of his cases showed remarkable improvement. Geosote is also useful in chronic bronchitis and in bronchiectasis.

The latest creosote preparation is *pneumin*, an insoluble powder containing a mixture of methylene compounds, the phenols obtained by distillation of wood. Excellent results from the administration of from 10 to 40 grammes (2½ to 10 5) daily are reported by Josef Margoniner.⁴

TREATMENT BY UREA, as advocated by Harper, appears to produce a beneficial effect in certain cases. Jarvis tried it in twenty-five patients who were suffering from tuberculosis or "scrofula," and thought that the results were more satisfactory than those usually obtained from other forms of drug treatment. S. Vere Pearson,⁵ however, from a careful comparison of cases treated with and without urea, arrives at the conclusion that so far as chronic pulmonary tuberculosis is concerned, urea exercises no definite action whatever on the disease, and this view is also supported by Pereira.

CACODYLATE OF SODIUM. The inconstancy of medicinal fashions has perhaps never been so strongly exemplified as in these restless days. Remedies are advertised, eagerly tried, hopefully reported, and disappear after a short period of utility. We have all witnessed good results from the administration of cacodylate, yet other methods have hurried it out of notice. Moreover, the unfairness of exaggerated reports of their

¹ Clinical Review, Chicago, May, 1902.

² Ibid.

³ Lancet, November 22, 1902.

⁴ Therap. Monats., November, 1902.

⁵ Ibid., February, 1903.

virtues is the source of disappointment to many and of equally undeserved discredit to the drugs and to their prescribers. Thus with cacodylate of sodium in the treatment of phthisis. It has nearly died out, although so extravagantly lauded to the public.

Sir Thomas R. Fraser¹ does not believe in the efficacy of the cacodylate. He has proved it to be absolutely inert, probably because the arsenic is so firmly combined that it cannot be split up and made use of. *Arrhenal*, or disodic-methyl-arsenate, Gauthier's latest arsenical preparation, is classed by Fraser in the same category as regards inertness.

HÆMOPYSIS, one of the most alarming symptoms of pulmonary tuberculosis, requires prompt treatment. Rest, which is always necessary, may often be applied locally with advantage. Thus O. Niedner² recommends thoroughly strapping the affected side—a method of treatment which can be promptly carried out. It is, however, by no means always easy to decide from which side the blood is coming. Klemperer³ obtains the same results by sand-bags of weights varying from one to five pounds. A. V. Weismayr⁴ aims at arresting hemorrhage in its incipient stage by absolute rest; but if it persists he bandages the limbs in such a way as to retard the venous flow, and thus frequently arrests the bleeding at once, the effect being to lower the blood pressure by collecting the blood into the veins.

Subcutaneous injection of gelatin is useful as in other forms of hemorrhage. L. Thieme⁵ records twelve instances. He injects 100 c.c. (fʒiij) of 2 per cent. strength subcutaneously into the thigh.

H. A. Hare⁶ thinks that *aconite* is the most useful drug internally if there is associated with the hemorrhage much arterial excitement; but the use of astringent atomizer sprays is useless, because they do not reach the bleeding spot.

Intravenous injections of calcium chloride have been recently suggested on the strength of the well-known local styptic property of that salt. Silvestri⁷ injects 100 to 150 c.c. (fʒiij to v) of a 1 per cent. solution of the calcium salt. He has obtained favorable results in four cases of uterine, intestinal (typhoid), pulmonary, and nasal hemorrhage, respectively. Prior to these four cases he had treated thirteen cases by the mouth and by the rectum. He draws attention to Zibell's statement that gelatin contains 0.6 per cent. of calcium, and that this may explain the value of

¹ Medico-Chirurgical Society, Edinburgh, January 21, 1903.

² Deutsche med. Wochenschrift, June 5, 1902.

³ Therap. der Gegenwart, April, 1902.

⁴ Wiener klin. Rundschau, March 30 and May 11, 1902.

⁵ Münchener med. Wochenschrift, February 24, 1902.

⁶ Medical News.

⁷ Gaz. deg. Osped. e delle Clin., April 13, 1902.

gelatin as a hæmostatic. The mineral salt has the decided advantage that it can be sterilized thoroughly. Some confirmation of the styptic value of calcium chloride is afforded by T. Wilson Parry's¹ case of severe hemorrhage from the gum in a hæmophilic boy which was not arrested by adrenalin, but yielded to the application of plugs saturated with calcium chloride solution of 30 grains to the ounce.

Intratracheal medication is administered in a mixed portion by M. Mendel² in cases of phthisis. He has satisfied himself, in the living as well as in the dead subject, that if the tongue be protruded and fluid be poured into the glossoepiglottidean groove it will round the edge of the epiglottis and drop into the trachea without exciting the slightest spasm. Three syringefuls (of 3 c.c. each) of the injection are dropped into the groove at each daily sitting, for a period of one month. The best results have been obtained with a 5 per cent. solution of essence of eucalyptus in olive oil.

THE THORAX AND LUNGS AND THEIR PHYSICAL EXAMINATION.

The Seat and Origin of the Vesicular Murmur. C. F. Hoover³ arrives at the definite conclusion that the alveoli are the seat of some sound-production, on the strength of the following experiment, "which may be performed on a healthy man: The subject closes the glottis and then makes a violent inspiratory effort. At the same time on auscultating the lungs we can hear a faint vesicular respiratory sound during the inspiratory effort and a faint expiratory vesicular murmur as the muscles are relaxed, though the glottis remains shut. The sound heard during relaxation of the inspiratory muscles is of low pitch and short duration. The two sounds are in their character and their relations identical with those of the normal vesicular respiratory murmur."

The Destruction and New Formation of Elastic Tissue in the Lung in Various Diseases has been studied by K. Sawada.⁴ The interest attaching to the subject can hardly be overestimated, as it touches the question of a possible regeneration of fibres in early emphysema.

The Diaphragm. Andrews⁵ finds wide variations in the height of the diaphragm, especially in females. His inquiry as to any relation between the height of the dome, the position of the viscera, and the thickness of the abdominal wall revealed the fact that abnormality in

¹ Lancet, February 21, 1903.

² Bull. et Méms. de la Soc. Méd. des Hôp., March 12, 1903.

³ Journal of the American Medical Association, September 27, 1902.

⁴ Virchow's Archiv, Band clxix., Heft 2.

⁵ Lancet, March 21, 1903.

position of the viscera was much more frequent in females and that the recti were smaller in them than in the male.

THE ANATOMY OF GLÉNARD'S DISEASE, as studied by Arthur Keith,¹ opens up the question as to the mechanical function of the diaphragm; and this is of direct concern to thoracic as well as to abdominal pathology. Interesting criticisms of Keith's views have been offered by J. Knott,² who points out that though the diaphragm tends to elevate the lower ribs, the combined contraction of the serratus porticus inferior, the function of which is to depress the four last ribs, results in an inspiratory broadening of the base of the thorax.

Pressure to the Thorax as an Aid in Diagnosis. To localize pain in the right or in the left side of the thorax, and to distinguish abdominal from thoracic pain, G. Moreno de la Torre³ suggests a simple method, which consists in applying firm pressure with both hands to one side of the chest, so as to immobilize the lung, and the same subsequently to the other side. The cessation of pain would identify the cause of pain with the lung compressed; but if the pain did not cease under pressure on either side of the thorax, its seat would then appear to be abdominal rather than thoracic.

"Tidal Percussion," as described by R. W. Philip,⁴ consists in the comparative determination of the range of respiratory rise and fall of the supraclavicular note of pulmonary resonance. Normally the upper limit of pulmonary resonance reaches one and a half to two inches above the clavicle. This is much reduced in disease, and the progressive return of a more ample range of resonance may be regarded as a sign of improvement.

Instrumental Aids in Diagnosis. *Rod auscultation* ("Stäbchen auscultation") of internal organs for purposes of delimitation has again been brought to notice by Edward Reichmann⁵ in an article which deals with the details of the method and with the objections which have been urged against it.

The *chest pantograph* is devised to convey to paper on a reduced scale (one-fifth), by means of a pencil fixed at *z*, the outlines traced on the body surface by the tracing point *t*. It has been found accurate and easily worked by its inventor, Winfield S. Hall.⁶ The requisites are a table, adjustable in height, to which the instrument is fixed at *f* by a socket; a seat adjustable in height; a horizontal rod fastened to the table at right angles to its edge opposite the socket *f*, to steady the patient's back.

¹ Hunterian Lectures, *Lancet*, March 7, 1903.

² *Lancet*, December 6, 1902, and February 7, 1903.

³ *Ibid.*, October 11, 1902.

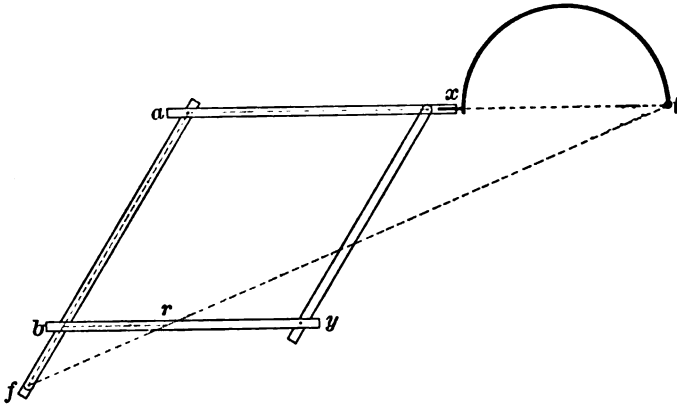
⁴ *Practitioner*, January, 1903.

⁵ *Deutsche med. Wochenschrift*, May 15, 1902, p. 354.

⁶ *Philadelphia Medical Journal*, February 28, 1903.

The joints are made of wood or of brass. The semicircular brass or steel rod tx , forty inches in diameter, rotates at x around the diameter tx . Its position can thus be reversed so as to obtain tracings from the front and from the back of the patient at one sitting.

FIG. 1.

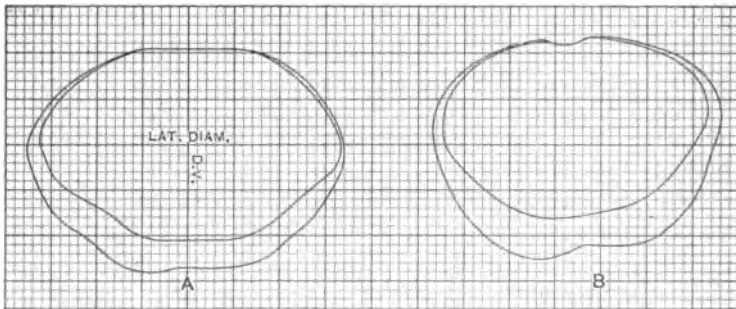


Chest pantograph.

The outlines in Fig. 2 were obtained in this way on ruled paper, showing the exact measurements on a one-fifth reduced scale.

This instrument, which is simple and easily folded away, seems well adapted for horizontal work. Further adaptations of the same idea may lead to its being applicable to clinical surface tracings in general.

FIG. 2.



Tracing made by chest pantograph.

Affections of the Pleura. **DIAGNOSIS.** *Cytoscopy* is rapidly passing into the realm of practical medicine, and physicians will become more and more dependent upon an expert microscopic examination. At the present time the value of these examinations varies with the experience of the examiner. We must be prepared to find that some of the early conclusions may have to be modified. Meanwhile much litera-

ture is accumulating, and the store of available facts is growing. Definite advances, too, have been made in the technique. Among the most important papers on this subject should be mentioned those by G. L. Gulland¹ and Barjon. Most observers agree that lymphocytes predominate in bacillary (tuberculous) effusions, polynuclear cells in pneumococcus and streptococcus effusions, simple endothelial cells in passive effusions, and cancer cells in some stages of cancerous effusions. Basophile leucocytes and eosinophiles are the cells least often met with in serous effusions.

The lymphocytes described as characteristic of tuberculous exudates are regarded by v. Patella² as being neither lymphocytes nor distinctive of a bacillary affection. He professes to demonstrate their nature as altered endothelial cells, and their various appearances as giving some clue to the duration of the effusion.

Inoscopy. Cytoscopy of the blood and of the fibrinous exudates for bacilli is much facilitated by André Jousset's³ method of "inoscopy," which consists in examining the coagulum rather than the fluid for bacilli. The clot is digested with an artificial gastric juice, and the digested result centrifugalized yields an abundant supply of micro-organisms if they should be present. This is an important aid to cytodagnosis. In twenty samples of pleuritic fluid it led to the detection of the bacillus in each case, and it is also available in peritoneal effusions. Indeed, it is applicable to all coagulable exudations. The feature of the method is the utilization of the collecting power of the fibrinous coagulation.

THE DIAGNOSIS OF NEOPLASMS OF THE PLEURA. Sörgo⁴ deals with the differential diagnosis of neoplasms of the pleura from the cytoscopic standpoint, and gives a full description of the various cell reactions to staining agents peculiar to the primary and to the secondary tumors respectively. The fluid from a pleura affected with primary endothelioma gives a much less abundant sediment than that from a secondary cancer, but it is a good rule to suspect neoplasms whenever the fluid contains many cells. According to Sörgo, the fluid is not often chylous or hemorrhagic; as regards the latter point, his view seems to be in opposition to that which has been current. Sörgo's cases included three cases of carcinoma and two of sarcoma.

Francis Delafield's⁵ study is limited to the primary new-growths or *endotheliomata* of the pleura—tumors originating in the endothelium of

¹ Scottish Medical and Surgical Journal, June, 1902.

² Deutsche med. Wochenschrift, April 17, 1902.

³ La Grèce Méd., January 13, 1903.

⁴ Zeitschrift Heilkunde, August, 1902, vol. xxiii., No. 8.

⁵ Medical Record, November 15, 1902.

the lymphatics and leading to an increase in the size and number of the latter. The insidious nature of the effusion and the absence of pyrexia, together with the blood-stained fluid often found on aspiration, are the chief among clinical features which are singularly neutral. Most often the case passes as one of common subacute pleurisy until suspicion is aroused by the protracted course of the effusion and by the patient's increasing loss of flesh or cachexia. This tendency to latency is a strong argument in favor of an early cytoscopic examination.

Titoff,¹ in reporting his four cases, supplies us with a valuable set of diagnostic points—cytoscopic and symptomatic. The discovery of bunches of cancer cells in the effusion, the rapid reaccumulation, the gradual change to a hemorrhagic type, and the implication of the supra-clavicular glands are significant changes. Among symptoms none, perhaps, is more striking than the persistence of pain after removal of the fluid in contrast with the relief afforded in the ordinary case of pleurisy.

AN HYDATID OF THE LEFT PLEURA, not involving, but compressing the lung, in a woman, aged forty-three years, was successfully treated by W. B. Ransom and W. M. Willis,² at first by drainage through the second intercostal space, and afterward by partial excision of the second and third ribs.

SPONTANEOUS PNEUMOTHORAX. Fussell and Riesman³ have observed and collected from the literature cases of so-called spontaneous pneumothorax. The possibility of this occurrence apart from tuberculosis is now well established. In certain cases, at any rate, the rupture of a local emphysematous bulla into the pleural cavity is the exciting cause, and in the same way subcutaneous emphysema may be produced. This explanation is further strengthened by the fact that usually the attack follows directly upon some strain or exertion. An interesting case is recorded by Jockmann⁴ of pneumothorax without any symptoms which improved under treatment, but recurred after six weeks and again disappeared. No evidence of tuberculosis could be found.

G. Zuelzer's⁵ case is analogous. It occurred in a man, aged eighteen years, apparently healthy, in whom complete pneumothorax of the right side developed suddenly. The chest was aspirated at the right base and air escaped with fluid. Further aspiration was performed, and within four days the symptom had entirely disappeared.

Prognosis in these cases must be guarded, as it is clearly impossible to exclude the possible existence of a minute tuberculous or caseous

¹ *Praktisches Vrtch*, i., 7-12.

² *British Medical Journal*, February 7, 1903.

³ *American Journal of the Medical Sciences*, August, 1902.

⁴ *Zeitschrift f. klin. Med.*, Band xiv., Heft 1 and 2.

⁵ *Die Therap. der Gegenwart*, December, 1902.

nodule at the apex. Zuelzer estimates at 90 per cent. the proportion of cases due to tuberculosis.

PLEURISY. *The clinical varieties of pleurisy* form a considerable group, a large part of which is made up by the tuberculous set, to which we shall revert.

A reclassification of pleurisies has become necessary in connection with recent advances in cytoscopy. Musgrave, Bard, and others have applied themselves to the task. Musgrave,¹ in addition to a primary and to a secondary *tuberculous pleurisy*, recognizes the *acute infectious pleurisies* by the relatively large number of the polymorphonuclear elements, the *mechanical pleurisies* by the abundance of large endothelial cells, and the *eosinophilic pleurisies* by the number of eosinophiles.

Typhoid pleurisy is described by George G. Sears.² The usual time for its appearance is after the first week, rarely earlier. It sometimes, however, occurs late or even during early convalescence or during a relapse. Widal's test does not always succeed, though sometimes the positive result is very marked. It is apt to be overlooked owing to its insidious mode of onset. As a rule, it is serous and non-hemorrhagic if occurring before the twelfth day. As regards prognosis, the serous form, at any rate, does not add to the fatality of the disease.

The clinical varieties of acute tuberculous pleurisy have been dealt with by Bard,³ who thinks that the different forms should receive just as much study as the varieties of pulmonary tuberculosis. He distinguishes three definite groups, viz.: (1) a localized form with an acute onset; (2) a secondary form, in which the infection arises from the lung, the peritoneum, or the thoracic wall; and (3) those forms which are associated with tuberculosis of other serous membranes or of the lungs. Bard considers that the treatment should vary according to the special form, puncture being most beneficial in the localized varieties.

The occurrence of an *embolic pleurisy* after operations has been established by G. Brown Miller.⁴ From an analysis of postoperative crural thrombosis from the gynecological department of the Johns Hopkins Hospital he finds that not infrequently pleurisy is due to a non-fatal pulmonary embolism arising from the thrombosis of the pelvic or crural veins. The pleurisy in these cases is secondary to an infarction, and unless this possibility is remembered tubercle or rheumatism are apt to be considered as the causes.

The prognosis of serous pleurisy has received important light from Richard C. Cabot's⁵ investigations of 152 cases free from evidence of

¹ Boston Medical and Surgical Journal, March 5, 1903.

² Ibid., December 4, 1902.

⁴ American Medicine, August 2, 1902.

³ La Semaine Médicale, June 11, 1902.

⁵ Ibid., June 7, 1902.

tuberculosis of the lungs or viscera as to the subsequent fate of the patients. Only twenty-three of them developed obvious tuberculosis. Eighty per cent. of them were in good health for five years or more. In most of the cases of tuberculosis the disease was of a mild type. Two-thirds of the tuberculous cases had a family or personal history of tuberculosis against one-fourth of the other cases. Recurrence of the pleurisy after recovery occurred in 3 per cent. of the cases. Reaccumulation of the fluid immediately after tapping was rare.

PLEURAL EFFUSION. *Physical Signs in Pleural Effusion.* The physical methods of diagnosis of effusion into the pleura may be regarded as fairly satisfactory and the additional physical signs recently proposed are not of major importance. The attitude assumed by the patient is made much of by Kelly.¹ That which is preferred, viz., a dorsal decubitus with raised shoulders, is such as to avoid bending or pressure on the side affected. The attitude of the ribs has been studied by Przewalski.² He makes out that there is not only a fixation, but an approximation of the ribs, which he would regard as probably due to a reflex contraction of the internal intercostals analogous to the muscular contractions observed in arthritis. This is an early sign and a distinctive one present alike in serous and in purulent effusions.

The heart is shown by Greene³ to undergo alternating lateral excursions with inspiration and with expiration, which can be traced by percussion, by auscultation, and by the X-rays. It will be interesting to learn whether the same peculiarity occurs in other conditions leading to unilateral thoracic and pulmonary excursion.

Finger pleximetry is recommended by Koranyi⁴ in preference to the use of Reichmann's rod to differentiate between fluid and consolidation. The left finger-tip is placed on the chest vertically and percussion is practised on the head of the proximal phalanx, the joint of which is bent at a right angle. This method combines the advantages of percussion and of palpation.

The same method has been described and illustrated by Plesch.

The characters of *pleural effusions containing fat* have been described by Muttermilch,⁵ who bases his observations upon a case in which the fluid looked exactly like milk. He points out that the chylous nature of fluid must not be judged from its appearance alone, but that the question can be decided only by a microscopic examination, and not always even then. In the chylous effusions there are numbers of actively

¹ Archives of Pediatrics, October, 1902.

² Centralblatt f. Chirurgie, April 5 and 19, 1902.

³ New York Medical Journal, August 9, 1902.

⁴ Wiener klin. Rundschau, March 30 to May 11, 1902.

⁵ Zeitschrift f. klin. Med., Band xlv., Heft 1-4.

moving very small fat granules, while larger granules and fat drops are scarce; but in the chyliform fluids the fat granules are larger and drops of fat more numerous. The relationship of lecithin, cholesterin, and fat to each other is not considered to be so important as has been thought by some, but the author thinks that the relation of cholesterin to albumin may perhaps have some definite significance.

The Pressure of Pleural Effusions. The manometric study of intrapleural pressures is systematically taken up by Bard,¹ with special reference to clinical purposes and practice. The paper deserves close, careful perusal, particularly as in the experimental part pure physics enter largely. Space forbids a discussion of the various points of this nature, and it will suffice to indicate the practical features. Siphonage is the method adopted. The vertical manometric tube, which should neither be so fine as to favor capillary action nor much wider than the canula itself, is connected with the latter. The presence of air-bubbles in the column of fluid is a major source of error to be carefully avoided. Any temporary blocking of the tip of the canula by contact with the pulmonary surface is indicated by arrest of oscillation.

After making due corrections for the weight of the intrapleural column above the point of puncture (this being taken as 0), for capillarity and for oscillation, Bard finds that the pressure is practically always negative not only during inspiration, but even during expiration in the majority if not in all cases, and this agrees with the experimental results of his intrapleural injections in rabbits. A positive intrathoracic pressure, which can be obtained only by using a distensible water-bag in the pleura to obviate absorption of the fluid, invariably leads to death in a few minutes. This fact supplies a possible explanation for the occurrence of sudden death in the human subject, if through accidental failure of absorption or of respiratory compensation the negative has been transformed into a positive pressure.

THE TREATMENT OF PLEURAL EFFUSION. *How soon should an effusion be removed from the pleura?* The difference in opinion which still prevails is exemplified by the practice of four of the large New York hospitals, as reported by Henry P. Loomis.² In only one of them is immediate aspiration carried out. In the others special indications are adopted as guides, such as painful symptoms, interference with the heart, or failure of the treatment to reduce the amount of fluid within six to ten days.

Many still regard pleuritic effusion as nature's remedy, to be respected for a while, just as a splint or a bandage must be worn for a time over damaged structures; but we are not told at what period and why these

¹ Rev. de Méd., April 10, 1902.

² Medical Record, January 10, 1903.

advantages are turned into a detriment. I have long acted on the opposite principle, that of early aspiration, which Delafield¹ urges unhesitatingly as the means to cure pleurisy as a morbid process. His short but weighty paper is based upon the clinical observations of 200 cases from hospital practice, the tabulated account of which gives the condition on admission, the date of tapping, the character of the fluid, any subsequent tapplings, any other treatment, and the number of days from the first tapping to the end of the pleurisy. "In a large number of cases the pleurisy is cured within a week, and none of them ought to be sick more than two weeks. In the more fortunate cases within twenty-four hours after one aspiration there is no more fluid and no more pleurisy." "None of the patients died, none of them was injured by the operation, and in none of them was the chest infected." So successful a record is the best argument in favor of early tapping instead of trusting to drugs or waiting for the urgent dyspnoea. It is to be noted, however, that in eighteen instances the patients did not recover rapidly, and left the hospital in an uncertain state of health. This would bring his experience more on a level with our own, and would account for the percentage of pleurisies which even repeated tapplings will not entirely cure. The proportion of 182 cures out of 200 is a high one at any estimate; but it should be understood that Delafield notes the cure of the pleurisy, not of the patient, for he tells us nothing of the subsequent state of the chest. In some of our cases, not necessarily the most severe, a lasting impairment of the thoracic movements remained, and in a very small but lamentable group a progressive contraction or ultimate collapse of one side of the chest is the result.

These facts have accordingly led me to adopt three stages in the treatment of simple pleurisy with effusion: (1) a short preoperative stage; (2) early tapping; (3) an all-important postoperative stage.

During the first stage the treatment has for its object to promote the absorption of the fluid; during the third to discourage its return.

The Mode of Evacuation of Pleural Effusions. The haphazard procedure hitherto prevalent is not readily defensible on physical or physiological grounds, although in most cases it answers the clinical purpose.

Various theoretical objections might be raised against the practice of suddenly removing a large bulk of fluid from the pleura by aspiration. Tension must be thrown upon those internal parts which have to take the place of the fluid. Is this good for the lung and its bloodvessels? Is it good for the pleura? Does it not tend to encourage fresh oozing from the lymphatics?

Bard, whose paper is to be referred to later, prefers siphonage to

¹ American Journal of the Medical Sciences, December, 1902.

aspiration. But there is another means of avoiding most effectually any suction upon fluids or tissues, viz., by introducing gas instead of the fluid. We are already familiar with this method for the treatment of pneumothorax (Potain), for the production of artificial pneumothorax in phthisis (Lemka), for the treatment of tuberculous ascites (Teissier), for the evacuation of empyemata (Ewart), for the evacuation of hydrocephalic fluid (Ewart and Lee Dickinson). Vaquez and Quiserne¹ have recently applied the same treatment to cases of recurrent pleuritic effusion. By means of a Y-shaped tube sterilized air is gently forced into the pleural cavity after the serous fluid has been removed, in the proportion of half a litre of air to three-quarters of a litre of serum. They report two cases of relapsing tuberculous serous effusion successfully treated. They dwell upon the relative impermeability of the pleura for nitrogen, which remains unabsorbed for considerable periods, whereas oxygen is quickly taken up. The principle is a sound one, and the method is likely to be of use in suitable cases.

C. Achard and H. Grenet² have employed the method described by Vaquez and Quiserne in ten cases. They point out its value in the purulent effusions of phthisis where thoracotomy is contraindicated as well as in relapsing serous effusions.

Empyema. A CLINICAL STUDY OF EMPYEMA by Charles F. Withington, is based upon the bacteriological findings in 135 cases by Councilman.³ The relative fatality of each of the various single invasions, and of their several combinations, is made out from the cases arranged in corresponding groups. The initial prognostic factor must, of course, be greatly modified for better or for worse by the accidents of treatment. The practical points are, therefore, of paramount interest. In pneumonia (and the majority of cases he believes were derived from pneumonia, viz., 80 at the least, and probably 95, out of 135 cases) prior to resolution aspiration only is to be performed and thoracotomy to be postponed. As regards the latter, ribs should be resected freely to obtain if possible permanent contact between the pleural surfaces. The differential diagnosis of *subphrenic abscess* is of primary importance.

This survey of the cases treated at the Boston City Hospital during the last six years is of great pathological as well as practical value. The facts that stand out most clearly are the desirability of early operation, the relatively greater fatality of mixed than of single infection, and the fact that, contrary to Prince Ludwig Ferdinand's (of Bavaria) finding, the streptococcus cases are not more fatal than those due to the pneumococcus.

¹ Gaz. Heb. de Méd. et de Chir., May 29, 1902.

² Soc. Méd. des Hôp. de Paris, April 17, 1903.

³ Boston Medical and Surgical Journal, November 6, 1902.

The latency of *empyemata* in infants and the difficulty in their diagnosis are well known. Vere Pearson's¹ paper elicited a useful discussion on various points of clinical interest, such as the occasional apyrexial course, the rarely absent leucocytosis, and the possibility of spontaneous absorption in the pneumococcal but not in the streptococcal form. The importance of X-ray examinations, of multiple punctures, if necessary, with a large-bore needle, in view of the thick matter present in pneumococcus empyema, and of resection of ribs for the sake of a sufficient opening to enable the finger to sweep off the membrane, was also discussed. G. A. Sutherland thought that multiple punctures might be unnecessary if an examination were made for percussion dullness when the patient was lying on the sound side instead of any other way.

Well-known facts in the *etiology of empyema* are stated by D. Bovaird.² He insists upon the frequency of the derivation from pneumonia or bronchopneumonia in children. In them the thick, creamy pus is most often found to contain the *pneumococcus*. The occurrence of the *staphylococcus* and of the *streptococcus* is much less common, giving rise to thin pus. The percentage of tuberculosis did not exceed 6.

The *internal medicinal treatment for empyema* belongs to a chapter which has hardly yet been opened. None will deny that to lay open the abscess is sufficient treatment, provided it succeeds; but in the continued suppurations from old sinuses no aid should be neglected. The purest of air inside the lung and outside it, too—in other words, seaside or mountain climate—is, in my opinion, the best prescription. Where this cannot be had some beneficial influence might perhaps be derived from medication such as that successfully used by Mayer,³ who has also employed turpentine for the suppuration of appendicitis. He has obtained very favorable results from the administration three or four times daily of a few drops of turpentine, the chief drawback to which is the risk of strangury or of hæmoptysis.

The *surgical treatment of empyema* includes two distinct objects, in both of which the physician is interested—the primary thoracotomy for the relief of pus and the later procedures too often necessitated by the unsatisfactory results of the primary operation.

The fact that the latter is not always successful justifies the attention devoted by many to the question as to the best method of operating. Various papers are contributed. C. N. Dowd's⁴ technique is thoroughly sound, and his results, as shown by forty-four cases, are entirely satisfactory.

¹ Transactions of the Royal Medico-Chirurgical Society, February 24, 1903.

² Medical News, New York, September 13, 1902.

³ Münchener med. Wochenschrift, August 12, 1902.

⁴ Medical News, New York, September 13, 1902.

Drainage without Tubes. Leon Brinkman's¹ new method deserves further trial. The essential point is the management of the parietal pleura, which is not incised until the excision of rib or ribs has been completed. It is then opened as freely as possible, and its cut edges stitched to those of the skin. Safe and free drainage is thus secured without tubes, and without their risks. The cutaneous edges of the incision may ultimately need freshening to promote their healing. The duration of Brinkman's twenty-two cases varied from three weeks to five months.

The local treatment of empyema by the injection of antiseptics into the cavity is another opportunity for treatment hitherto neglected. The writer of this report proposed about eighteen months ago to perform this operation with protargol solution in a child, with a view to avoid, if possible, opening the chest; but owing to complications the injection was not made, and he has not yet elaborated his method. Meanwhile R. E. Drake-Brockman² reports a case in which he injected on two occasions, after aspiration, one-quarter grain of perchloride of mercury dissolved in two and a half ounces of water into a large empyema (90 ounces) which the patient would not allow to be incised. Brockman attributes the rapid and complete recovery to this treatment, while admitting that some empyemas are spontaneously absorbed.

Drainage without Incision. E. Fletcher Ingals³ reports excellent results from a simplified method of operation not requiring general anaesthesia or resection of a rib. A double tube is introduced into the chest by means of a trocar, which latter is removed, leaving the tube *in situ*. He believes that from 95 to 98 per cent. of early pneumococcus cases may be expected to recover. A more radical operation with costectomy may be resorted to at any later date, if indicated.

My own view is that if it is proposed to cure an empyema without incision the cavity should not be simply aspirated, but irrigated with a safe and efficient germicidal solution through a double tube, such as that used by Ingals, then thoroughly emptied by allowing sterilized air to replace any remaining fluid and the tubes finally removed, the operation being from beginning to end a "closed operation." If, on the contrary, the empyema is to be treated as an open abscess, the opening can hardly be too free, and in most cases the resection of a large piece of rib seems to be the best treatment.

The Postoperative Treatment. Suggestions are almost more needed as to the best method of treating the chest after thoracotomy. Enough personal attention is not always given by the surgeon to the after-

¹ Pennsylvania Medical Journal, January, 1903.

² British Medical Journal, January 10, 1903.

³ Illinois Medical Journal, January, 1903.

management of the case. A great deal more is needed than the routine daily dressing, which is too often intrusted to inexperienced hands. Watching the progress and meeting the indications in time to avoid deplorable results ought to be reckoned among our highest surgical and medical responsibilities, and the occurrence of bad results as reflecting upon the management of cases.

Thoracoplasty. The third stage for surgical interference is that of permanent deformity of the chest. Thoracoplasty has for its object to drain the cavity and to obliterate the space between the lung and pleura. For this, according to Mignon,¹ each case must be studied by itself. Whether the main axis of the abscess be horizontal or verticolateral it must be opened wide and free. The number and the extent of rib resections must be determined by the size of the accumulations. Mignon has operated four times on one case before finally succeeding.

The matter is well put in an editorial of the *Journal of the American Medical Association* (February 14, 1903), which compares the operation of Estlander, of Helsingfors, and its modification by Schede, of Bonn, the essence of which is to reduce the disproportionate pleural surface down to the diminished pulmonary surface, with the decortication operation of George R. Fowler,² of Brooklyn, often referred to as Delorme's operation,³ which aims at liberating the lung by stripping off its fibrinous casing, that it may re-expand up to the capacity of the pleura. The percentage of permanent cures from Fowler's operation (35.7 per cent.) does not yet equal that recorded from Estlander's (56.3 per cent.), but there is opportunity for further improvement, and the final result is incomparably better.

Primary Sarcoma of the Lung Simulating Empyema. An important paper commenting upon this case, by H. D. Rolleston and R. S. Trevor,⁴ gives us the following conclusions of the investigation of the cases recorded at St. George's Hospital: "(1) Primary malignant disease of the lung proper, whether of the body or of the root, is of the nature of sarcoma; (2) primary sarcoma of the body of the lung is of the spindle-celled variety; (3) primary sarcoma of the root is of the nature of endothelioma. The very close morphological resemblances between endothelial and epithelial cells, and the similarity in the amount and disposition of the stroma, account for the confusion between endothelioma and carcinoma. Further examination of root 'cancers' from this point of view is needed."

The Surgical Treatment of Bronchiectatic Abscess. The *Medical News* for September 13, 1902, which contains articles, already noticed,

¹ Rev. de Chirurgie, April, 1902.

² Medical Record, December 30, 1903.

³ Congrès de Chirurgie, April, 1893.

⁴ British Medical Journal, February 14, 1903.

on empyema, by H. Koplik, C. N. Dowd, and D. Bovaird, has a paper by C. R. L. Putnam on bronchiectatic abscess of the lung, based upon an instance of successful surgical treatment. The condition is one which an improved radioscopy, in addition to other methods, should help us to diagnose from ordinary abscess, vomica, gangrene, actinomycosis, and hydatid, and which when duly diagnosed might justifiably be operated upon. He draws attention to the device, applicable to cases with drainage through the bronchus—of compressing the lung by air or nitrogen admitted into the chest cavity during inspiration through a hypodermic needle.

THE AFFECTIONS OF THE BRONCHI AND THEIR TREATMENT.

Foreign Bodies in the Air-passages. R. A. Wilson¹ records a case where a portion of a vulcanite pipe-stem, half an inch long and a third of an inch broad, was expectorated during a paroxysm of coughing after being impacted for seventy-two days. Attention is drawn to the fact that the hollow pipe-stem apparently allowed air to pass through it, and that collapse of the lung was thus averted.

Korteweg² describes a case of impaction in the lung of a portion of lyddite shell, which was subsequently removed by operation. He lays stress on the necessity of operating earlier when the foreign body is not coughed up. His statistics show that late operations, though they may often relieve symptoms, do not save life.

Fiessinger³ reports two instances of concretions in the lung which gave active symptoms resembling those of tuberculosis, but which were coughed up in the end, when all symptoms disappeared.

Bronchopneumonia and Capillary Bronchitis. THE TREATMENT OF BRONCHOPNEUMONIA is almost as unsatisfactory as that of lobar pneumonia as regards the etiological indication. In severe cases, particularly in infantile capillary bronchitis, our remedies are often powerless. Here, again, as in extensive lobar pneumonia, a toxic element is superadded to mechanical alterations which in themselves may be almost insuperable. These consist in the air-tight obstruction of lobular and sublobular bronchioles, and in the increasing strain thrown upon the right heart by the pulmonary congestion, collapse, and collateral emphysema. These are conditions more readily prevented than cured, and it follows that therapeutics are needed at the earliest stage. Well-considered medicinal treatment may then be of decided value if associated with

¹ *Lancet*, November 22, 1902.

² *Annals of Surgery*, July, 1902.

³ *Journ. de Médecine*, July-September, 1902.

respiratory treatment. The latter has not yet received the attention which it deserves. The treatment of the bronchi must surely be through the air, but our present methods of inhalation are relatively crude and ineffectual. Among others the question of oxygen inhalation needs elaboration. We must learn to utilize the advantages while avoiding the risk of any irritation to which oxygen might give rise in a tender mucous surface through its undue dryness or concentration. The gas may be readily moistened and warmed by passing it through a wash bottle charged with damp cotton-waste or cotton-wool.

Bronchopneumonia is treated by Judson Daland¹ by antiseptics of the mouth and nasopharynx, one litre daily of Vichy or some equivalent, the iodides of sodium and of strontium, nux vomica, or one-twentieth to one-thirtieth of a grain of nitrate of strychnine every four hours, and if necessary heroine (one-twenty-fourth grain) or codeine (one-eighth grain), together with rest and nursing. Daland, in contrast to the prevalent doctrine of absolute rest for inflamed lungs, recommends forced breathing every four hours.

The treatment of infantile bronchopneumonia adopted by T. Zangger² is by no means new, but it carries out the essential indication of employing the most useful remedies sufficiently early. He believes in the efficacy of short tepid baths rather than in the chest-pack. The baths are to be repeated if necessary every eight to twenty-four hours, not exceeding five minutes, with an initial temperature of 86° F., to be gradually reduced after two minutes to 76° F.; and they are to be combined with rubbing. Sponging is more suitable for feeble infants than immersion.

The cold chest bandage is a favorite remedy for bronchitis, both in the infant and in the adult, as well as in cases of early phthisis.

The results claimed for the tepid bath, viz., a reduction of the fever and a flushing of the cutaneous surface, have also been claimed for the old-fashioned warm mustard bath (one tablespoonful of mustard to one gallon of water), and for the warm mustard wrap, with a cloth wrung out of mustard-water of double the said strength. These are homely remedies, but they are of undoubted value.

Aided expiration, so valuable in the dyspnoea of coarse emphysematous bronchitis, of emphysematous asthma in the adult, and in other conditions, is a method which suggests itself in connection with the bronchopneumonia of infants; but the theoretical objections which may be made to it are only too well justified by the results. The tubes in infants are too small to be unblocked, but they may burst under the pressure of artificial respiration, and interstitial emphysema may be thus

¹ Journal of American Medical Association, March 21, 1903, p. 798.

² Lancet, June 28, 1902.

substituted for essential emphysema. Moreover, while air is driven out, it cannot be drawn in by the feeble elasticity of the infantile chest. The alveoli do not expand again. The respiratory paralysis remains; it is merely converted from the emphysematous into the atelectatic variety.

Four cases of arthritis complicating infantile bronchopneumonia are reported by H. Bichat and R. Goepfert.¹ The joint affected contained in two of the cases the pneumonococcus, in the other two streptococci and staphylococci.

Inhalation Bronchitis. BRONCHIOLITIS FIBROSA. Fraenkel² reports a case of this affection which was apparently due to the irritating fumes of nitric acid. After death, which occurred with dyspnoea, cyanosis, and a rise of temperature, a microscopic examination showed the bronchioles to be blocked by small fibrous masses, while to the naked eye the condition resembled miliary tubercle. The paper is an important contribution to the literature of a condition which has not often been observed or described since Lange first called attention to the disease. Fraenkel's patient was aged twenty-five years, a workman in a foundry where the acid was in use.

The effects of the inhalation of smoke and of irritating and poisonous gases by firemen and the proper treatment of results has engaged the attention of J. Chalmers Da Costa,³ who enters into full details. These, although of great interest, cannot be done justice to in the space at our disposal. The subject is a new departure and well worthy of clinical investigation.

Some Special Forms of Bronchitis. CASES OF STREPTOCOCCUS AND OF STAPHYLOCOCCUS BRONCHITIS have been observed by Joseph M. Patton.⁴ He describes three cases which he regards as instances of primary infection. The condition is common after influenza and in phthisis as a secondary infection, both of which were here absent. The tendency to localization is not apical as in phthisis, which the affection is apt to simulate. He finds that the streptococcus gives rise to a more active and toxæmic affection, while the staphylococcic variety is more chronic as well as milder. In cases of average severity the diagnosis may be impossible except under the microscope. Inhalation is recommended in addition to tonic and alterative courses of expectorants.

David Lawson contributes to the *Edinburgh Medical Journal* for April, 1903, full notes of a fatal case of pure streptococcus infection of the lungs and pleuræ. Among the special clinical features were the

¹ Rev. Méns. des Mal. de l'Enfance, August, 1902.

² Deutsche Arch. f. klin. Med., Band lxxiii.

³ Therapeutic Gazette, Detroit, March 15, 1903.

⁴ New York Medical Journal, March 28, 1902.

intermittent character of the expectoration, which twice completely disappeared; the almost complete absence of sweating; the presence of an exocardial murmur, which ceased when the abscess cavity, laid open by incision in the left side, was filled with boracic solution. The expectoration and the pus were free from tubercle bacilli, but full of streptococci.

PNEUMOMYCOSIS. K. Hochheim¹ reports a case in which a man contracted septic infection of the right arm, which finally involved the left, and ended fatally. After death caseous deposits were found in the lung, which were found to contain *aspergillus fumigatus*, and cultures injected into rabbits gave rise to disseminated nodules and rapid death.

A **MALARIAL BRONCHITIS** has often been described in the past, but some doubt had been entertained as to its specific nature. Sverzshevsky² has observed three cases in a series of 148 malarial patients; in all three the acute bronchitic symptoms associated with coryza and pleuritic pain disappeared on the administration of quinine.³

Influenza. The relation between atmospheric pressure and epidemic influenza in Philadelphia has been carefully studied by Howard S. Anders⁴ in two groups of twelve years marked by relative prevalence of, and relative freedom from, influenza. The corresponding records of the Weather Bureau have disclosed the fact, which common experience had foretold, that the epidemic periods were marked by a much greater monthly absolute range than the periods of infrequent or sporadic outbreaks.

INFLUENZA AND THE NERVOUS SYSTEM. Smith E. Jelliffe,⁵ writing on the subject of the recent epidemic, points out that though it may not have been so fatal as some of the earlier ones, it has had its serious aspects, among them an increasing tendency to nervous sequelæ and to insanity. It might be of use to add to the prophylactic measures which he recommends against relapses and against a spread of the infection a systematic cleansing of the nares as well as of the mouth.

HYPERPYREXIA IN INFLUENZA has been recorded by two observers. F. Harman Brown's patient died, but George H. F. Graves' patient recovered.⁶

The Treatment of Bronchitis and Catarrh. **GERMICIDAL INHALATIONS.** Wassmuth's *inhalation apparatus* for the fine vaporization of solutions in sufficient quantities to fill public rooms is favorably noticed by von Gerlach.⁷ The microscope showed the drops to be ex-

¹ Virchow's Archiv, Band clxix., Heft 2. ² Med. Obozr., 1902, vol. lviii., No. 17.

³ Abst. Philadelphia Medical Journal, 1902.

⁴ Philadelphia Medical Journal, January 24, 1903.

⁵ Ibid., December 27, 1902.

⁶ British Medical Journal, January 31, 1903.

⁷ Therap. Monats., June, 1902.

ceedingly small, as small as red cells and even smaller. As the result of his experiments he states that an hour's exposure to the vapor of Wassmuth's solution will kill tubercle bacilli. This fluid contains 5 per cent. of the following principles: 74.36 grammes anhydrous salt; 7.94 grammes total chlorine; 1.59 grammes available chlorine; 32.24 grammes oxide of sodium (natrium oxide); 28.32 grammes anhydrous boric acid. The vapor is non-irritating and is well borne.

A new apparatus for the inhalation of germicidal gases is described by Victor Rudolph.¹ Its construction is shown in the accompanying illustrations:

FIG. 3.

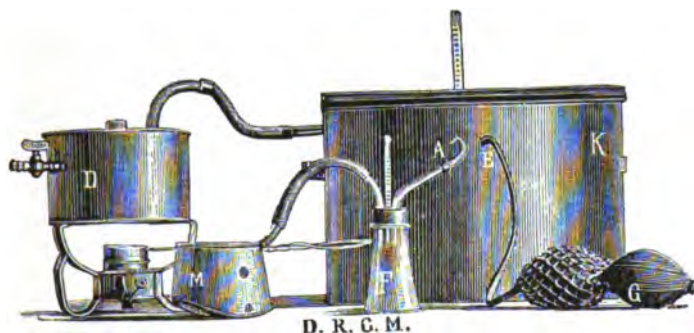
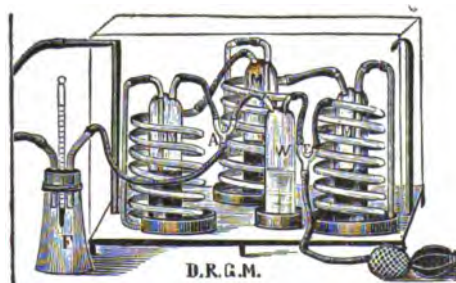


FIG. 4.



The fluid selected for atomization contains pure guaiacol, 100 parts; pure acetic acid, 1 part; eucalyptol, 6 parts.

Rudolph's conclusions are that the vapor produced by driving air through this solution in his apparatus is germicidal; that it penetrates into the alveoli, and that the active principles circulate through the body with the blood.

Another nebulizer is brought forward by M. Saenger,² of Magdeburg.

¹ *Therap. Monats.*, August, 1902.

² *Ibid.*, January, 1903.

Evidence as to the value of oxygen inhalations has been sought and obtained by E. Rogovin¹ by clinical and by experimental investigations. He has satisfied himself that an additional amount of oxygen can be absorbed into the blood, particularly when, as in cyanosis and in severe dyspnoea, the oxygen percentage has dropped considerably below par; and that this increased absorption accounts alike for the relief of various forms of asphyxia, and in animals for the partial or complete recovery from the toxic symptoms from such poisons as chloroform, morphine, strychnine, anilin, illuminating gas, etc. The same article may also be consulted for a review of the literature of the subject.

RESPIRATORY GYMNASICS AND THEIR USES. Hoffmann² describes the procedure of the simplest of respiratory exercises, viz., a deep inspiration with shoulders thrown back, after a very deep expiration aided by the forcible contraction of the abdominal muscles. This is the best remedy for emphysema, and is also excellent treatment for abdominal and venous congestions. It is of great value in faintness and in threatening seasickness. Hoffmann directs his patients to practice in the open air. Air is to be drawn in by successive instalments (*ruckweise*) for three or four steps, and breathed out again in jerks (*stossweise*) during the next four to six steps.

IODIDE OF ARSENIC AS A REMEDY FOR BRONCHITIS is specially recommended by Saint Philippe³ for scrofulous children after infectious disorders, such as influenza, measles, whooping-cough, etc. Five drops of a solution of five grains to the ounce are given in milk with each meal, and the dose is quickly raised to a maximum of fifteen or twenty drops, which is kept up for a month, then gradually reduced, and once more increased.

Sternberg⁴ reverts to the old dry plan of curing a cold by abstaining from fluid for forty-eight hours after the cold is felt.

Hay Fever.⁵ **THE PATHOLOGY AND TREATMENT OF HAY FEVER** bid fair to rank among the striking advances of medicine during the last year. Dunbar⁶ has announced that he can produce the symptoms at will in susceptible subjects, even in the depth of winter, by the subcutaneous injection of pollen toxin; and he professes to have discovered the antidote as well as the poison. The latter, which is not the essential oil but an albuminoid body, may be obtained from the pollen of a score of grasses, but not at present from roses or other flowering plants.

¹ Virchow's Archiv, Band xlv., Heft 5 and 6.

² Therap. Monats., October, 1902.

³ Journ. des Praticiens, 1903, vol. xvi., No. 16.

⁴ Zeitschrift f. Diätet und Physikal Therapie, Leipzig, 1902.

⁵ See PROGRESSIVE MEDICINE, March, 1903.

⁶ Weitere Beiträge zur Ursachen und specifischen Heilung des Heufiebers. Deutsche med. Wochenschrift, 1903, No. 9.

After long trials he has also obtained an antitoxin serum from animals which neutralizes the toxin *in vitro*, and either arrests or cures its local effects when applied with or after the pollen-toxin to the conjunctival or nasal mucous membrane, even though the toxin may be that derived from a different grass—a fact which leads him to believe in the identity of the pollen poison in the various species.

Dunbar's results have recently been placed before the profession in England by Sir F. Semon,¹ whose demonstration of the facts should be read in the original. Semon arrives at the following conclusions :

1. The toxins extracted by Dunbar from the pollen of certain grasses (maize, wheat, rye, *anthoxanthum odoratum*, *agropyrum repens*, *cynosurus cristatus*, etc.) when instilled into the eyes or nostrils of people predisposed to hay fever produce in these parts the characteristic subjective and objective symptoms.

2. In people not predisposed, in the great majority of cases, no symptoms whatsoever are produced; but there appear to be transitional instances.

3. The local and constitutional effects of the toxin are as variable in intensity as are the attacks of the affection itself.

4. Dunbar's antitoxin produces immediate disappearance of the subjective and, after a few minutes, great amelioration of the objective symptoms.

5. The addition in equal parts of a toxic solution (1 : 500) to the antitoxic serum suffices to neutralize the specific effects of the toxin.

6. In some instances repeated instillations of the antitoxin are required.

This preliminary report raises hopes which may be delusive. Already "neurotic influences" and "autosuggestions" have been whispered as possible associations. It seems, however, that solid rock has been struck by some of the experiments and that we are in possession of new facts laden with future developments.

The results obtained by E. Fletcher Ingals and John Edwin Rhodes² in twenty cases of hay fever, from equal parts of fluid extracts of rag-weed and golden-rod, together with local treatment, should also be mentioned. Twelve were relieved by the internal remedy, and thirteen, or 72 per cent., were improved by the spray.

The importance of these new departures throws into relative shade the older lines of pathological and clinical inquiry, but we cannot altogether disregard the conflicting claims of the various theories and rival remedies.

A. Thost³ remarks that the question of pollen being the direct cause

¹ British Medical Journal, March 28, 1903.

² Journal of the American Medical Association, June 28, 1902, p. 1684.

³ Münchener med. Wochenschrift, April 29, 1902.

is doubtful, because flowers which do not contain much pollen may cause symptoms, and pollen cannot always be found in the nasal mucus. The odor of the ethereal oils may be the cause, and he believes that the olfactory nerve is the chief culprit. Any local disease of the nose acts as a predisposing cause, but he finds the relation of hay fever to gout less pronounced than has generally been thought. His collective inquiry, responded to by 400 sufferers, bears out the view that though not curable the affection is preventable, and can be improved by local and symptomatic treatment.

Hope¹ thinks that inflammation of the middle turbinate is the chief determining local factor, and recommends surgical treatment accordingly.

Jervey² trusts to local and general measures, viz., alkaline and cocaine sprays, together with suprarenal extract, for the large majority of cases, besides tonics, regulation of bowels, and careful choice of surroundings. His method includes spraying the nose with an alkaline solution, and if necessary with a 10 per cent. cocaine solution, as a preliminary to the application of an aqueous solution of suprarenal extract. He also prescribes suprarenal extract internally (3 grains every three hours) to abort the attack.

The *Therapeutic Gazette* wisely warns against placing cocaine solutions into the hands of patients for their own use, and recommends cocaine chiefly as a preliminary to the rather painful local application of anti-pyrin as an anæsthetic (2 to 4 grains to the ounce in camphor-water), which has been found useful in combination with the local or hypodermic use of adrenalin chloride.

R. K. E. Clarke³ has found suprarenal extract useless internally, and only of use in vasomotor rhinitis pure and simple; but not in cases with coexisting structural abnormalities until these had been dealt with.

It is claimed for the spray recommended by A. Pugat, of Vienna, for acute coryza, and consisting of liquid vaselin with 5 per cent. cocaine hydrochloride and 5 per cent. menthol, that it is less likely than cocaine solution alone to set up the cocaine habit, and more effectual in relieving the headache and sense of obstruction within the nose during the acute stage of the disease.

Asthma. It is not necessary to enter into a detailed analysis of the many writings on asthma. The most efficacious remedies seem to be those concerning which least is said in medical literature. Success often rests with the empiricist. The essentials are a recognition and the relief of the special local irritation, the site of which may be any-

¹ Laryngoscope, St. Louis, August, 1902.

² New York Medical Journal, August 9, 1902.

³ Medical News, June 21, 1902.

where in connection with the sympathetic and the vagus or which may even be psychical, and the cultivation of hygiene *à outrance*. These are the lines recommended in various thoughtful papers, such as that of B. Robinson.¹

Special attention may, however, be claimed for two important monographs, one by Sihle, of Odessa, an exhaustive clinical study, and Brodie and Dixon's pathological paper.

Sihle's² clinical study of asthma should be read. The specific catarrh forming part of the attack may, he thinks, be regarded as an essential part of the pathology, or merely as secondary to the bronchial changes; but opinion seems to be unanimous as to the primary importance of bronchial spasm. Sihle has made a special study of some of his cases during the intervals. In his descriptions of the well-known symptoms of the attack special stress is laid upon enlargement and tenderness of the liver, which are apt to persist. For its recognition he recommends Henschen and Buch's method of "transsonant percussion."

No less important are his observations upon blood pressure. In asthmatics during the interval the blood pressure shows a low level and an increased range, and during the paroxysm there is no rise of pressure in the peripheral vessels. This might bear the interpretation that while the intrinsic respiratory muscular system is stimulated the vascular muscular system is inhibited.

Among the etiological factors he recognizes a tendency (1) to increased bronchial tone and spasm; (2) to decreased vasomotor tone; (3) to congestive hyperæmia of the respiratory mucosa; (4) to an abnormal and specific secretion from the latter.

These tendencies are influenced by the condition of the blood, of the peripheral nerves, and of the central (and particularly cortical) nervous system, so that the asthma may be hæmatogenic, neurogenic, or psychogenic. The special features of each case must be treated during the interval. Sihle believes that too large a share has been attributed to nasal and posterior nasal affections in the production or aggravation of asthma.

Some points in the pathology of asthma have been worked out experimentally with the plethysmograph by T. G. Brodie and W. E. Dixon,³ which it is instructive to compare with Alexander Francis' clinical observations and impressions, and which support the current spasmodic theory. The motor fibres for the bronchial muscles run in the vagus, but as no dilatation follows vagus section it appears that normally the muscles have no tonus. The existence of dilator fibres also running in the vagus has now been proved by the relaxation which can be obtained

¹ Medical News, New York, September 27, 1902.

² Wiener klin. Wochenschrift, January 22, 1903.

³ Pathological Society of London, December 16, 1902; cf. Lancet, December 27, 1902.

by suspending, through stimulation of the vagus, the artificial tonus induced by muscarin or pilocarpine. None of the motor fibres pass through the ganglion stellatum or through the upper thoracic spinal roots. Reflex irritation seems to be a more probable cause of the spasm than direct irritation, as injections of saline extract of asthmatic sputum, and of spermine (Charcot-Leyden crystals) produced no effect; whereas reflex constriction might at times be produced by excitation of the sciatic nerve, and more frequently by excitation of the central end of the divided vagus. The best reflex effects were obtained, however, by stimulating a spot well back on the nasal septum and high up. No reflex effects were obtained from the cornea, nor have any dilator effects hitherto been observed.

Constricting drugs, such as muscarin, pilocarpine, physostigmine, etc., acting upon the nerve endings are completely antagonized by atropine; others, such as bariun, veratrine, bromine, chloride of gold, etc., acting upon the muscles, are not in the least antagonized. Atropine is thus shown to deserve its reputation; a small dose suffices to abolish the vagus effect, but a dangerously large dose might be needed to overcome the spasm. Lobelia has a remarkable but evanescent effect, lasting two or three minutes, in dilating bronchi artificially constricted by muscarin or pilocarpine.

THE NASAL TREATMENT OF ASTHMA. Alexander Francis¹ (Brisbane) has caused something akin to a sensation by advocating the galvanocautery in cases where there was no obvious disease of the nose. His facts are as follows:

"Total number, 402 cases. Nature: nose apparently normal in 346, polypus in 32, other gross lesions in 24 cases. Results: complete relief obtained in 194, complete relief until lost sight of or still under treatment in 30, great improvement in 73 cases, great improvement until lost sight of or still under treatment in 50, temporary relief in 20, slight relief in 4, no record in 17, no relief in 14 cases. Males 282, females 120."

His conclusions are that: 1. Asthma is due to reflex spasm of the bronchial tubes. 2. The irritation may originate in the nose; this was inferred from the intimate association between hay fever and asthma and from the immediate onset of asthma after certain injuries to the nose. 3. Asthma is not directly due to any mechanical obstruction or any gross nasal lesion. The association of polypi is not so common as generally supposed. The best treatment is to cauterize the septum without touching the polypi. 4. Some part of the nasal apparatus has a controlling influence upon the respiratory centre. Cauterization of the septum has

¹ British Medical Journal, October 18, 1902.

often been successful even where the existing irritation was gastric, cardiac, or even renal. Francis can offer no explanation, as his discovery was accidental. In some cases the relief seemed to be confined to the lung on the side on which the cauterization was effected, the patients stating that they felt as if something had been loosened along the lower border of the ribs. The sensitive area for local treatment varies in each individual and has to be found.

Charters J. Symonds¹ has generally found the spongy, gelatinous, sensitive area opposite the lower edge of the middle turbinal, except in "olfactory asthma" cases and in some cases of asthma and of paroxysmal sneezing where the middle turbinal is pale and gelatinous.

P. Watson Williams,² who agrees that there may be in the nose "an agency through which the afferent respiratory impulses must pass," believes that the controlling influence from cauterizing the septum or inferior turbinal can only be temporary unless general tonic and hygienic measures be adopted. Herbert Tilly suggests that the air of Australia might tend to make the treatment there more efficacious than it may be in England.

THE DRUG TREATMENT OF ASTHMA. A useful addition to our time-honored remedies is hydrochloride of heroine (one-half to one-sixth grain) subcutaneously, to be followed by its internal administration every four to six hours (Musser, Manges, and others). The same drug is of use in renal and in cardiac dyspnoea.

DIET IN ASTHMA is regulated by Jack³ according to the morphological condition of the blood in association with that of the alimentary tract. He recognizes various types of asthmatic lymphocytosis and of asthmatic toxic leucocytosis. Alkalinity of the stools suggests that less meat should be taken; acidity of the stools, that less carbohydrates should be taken. The blood count gives the following guides: In excessive lymphocytosis, milk should be diminished or withheld (in infants the bottle should be substituted for the breast). In polymorphonuclear excess, the meat supply is to be curtailed. In marked iodophilia starchy alimentation is to be restricted. Thin, pale, watery blood with deficient "biomagnetic" power of rouleau formation calls for fresh meat and green food.

Jack's doctrine may be regarded as somewhat in advance of current knowledge and perhaps of demonstrable fact; but a true note has been struck in the practical endeavor to base individual alimentation not only, as heretofore, upon a study of its waste in the shape of the urine and the feces, but upon a study of its chief product—the blood.

¹ *Lancet*, October 25, 1902, p. 115.

² *British Medical Journal*, November 8, 1902.

³ *Buffalo Medical Journal*, December, 1902; *Philadelphia Medical Journal*, February 17, 1903.

Cardiac Dyspnoea. The definition and the description of cardiac dyspnoea are a difficult if not hopeless task. This has been attempted by L. B. Popoff,¹ only with the prudent addition of an auxiliary group of "allied conditions." There is, indeed, no definite affection strictly corresponding to the name, but the acute breathlessness in question has the most varied causes, including intoxications and autointoxications (uræmia, diabetes, etc.).

Popoff recognizes two cardiac forms—that characterized by pure asthma, and another occurring in hypertrophy of the left heart with dilatation of the right, and resulting in pulmonary congestion. The vascular forms are numerous; they include arteriosclerosis and its consequences, aneurism and its pressure effects, tachycardia and angina pectoris.

Cardiac dyspnoea is, as incidentally remarked by Sir William Broadbent² at the Manchester meeting of the British Medical Association, usually of mechanical origin and due to a dilated stomach. Lavage with sulphocarbolate solutions at night, in preference to the morning, is the best means of obviating the risk of fermentation and its results.

Hysterical Tachypnoea is often most intractable. H. Curschmann's³ paper relates two cases associated with organic heart disease. One of these, a girl, aged twenty years, had paroxysmal hurry of breathing up to 60 and even 100 in the minute, with acute failure of compensation. The heart improved with rest, but the tachypnoea continued and yielded to valerian and to faradization to the cardiac region. In one of these attacks the respiration rose to 140 per minute. The other patient, a man, aged forty-seven years, had been liable to this symptom under excitement since an injury. He exhibited a diminution of sensation in the left half of the body, and this suggested a traumatic hysteria which may have accounted for the respiratory disturbance. Curschmann remarks that in this *hysterical dyspnoea* there is no obvious evidence of defective oxygenation, and no proportionate increase in the frequency of the heart's action unless there be some myocardial degeneration. Hysterical tachypnoea is usually paroxysmal, and the respiratory movements are usually limited to the base of the thorax. In a remarkably inveterate case, formerly under the observation of the present writer, the unusually hurried respirations strongly reminded one of the panting of a dog lying in front of a hot fire.

The thoracic movements did not apparently effect much alteration in the respiratory area of the lung, but merely a shallow ventilation of the tubes.

¹ Bolnitch. *Gaz. Botkina*, April 10, 1902; *British Medical Journal*, 1902.

² *Lancet*, August 2, 1902, p. 324.

³ *Münchener med. Wochenschrift*, February 17, 1903.

Pulmonary Gangrene. Pulmonary gangrene is discussed by F. A. Packard and R. G. Le Conte¹ in its medical and surgical aspects. The case which they relate presented difficulties in diagnosis which had delayed its treatment. It was diagnosed by them as gangrene secondary to bronchiectasis, and was operated upon with partial excision of the seventh rib; this, however, did not avail, and death ensued twenty days after the operation.

Details of six cases of fatal pulmonary gangrene in children are given by Francis Huber,² and Walter Lester Carr³ describes a fatal case of infantile bronchopneumonia, with gangrene as a complication.

In Schlechtendahl's young patient, after the discovery of pus by aspiration, thoracotomy revealed pulmonary gangrene, which was cauterized with Paquelin's cautery. Her eventual death from sepsis was explained by the presence in the right lower bronchus of a head of wheat with some actinomyces granules, but there was no actinomycosis of the lung.

THE BLOODVESSELS.

Stenosis of the Aorta. L. M. Bonnet's⁴ case is a good clinical as well as pathological illustration of this affection. The patient, who had been well until twenty-five years old, died at the age of twenty-seven with a valvular disease and broken compensation, probably partly owing to the hardships of military service. He presented a double aortic murmur and a systolic apical murmur, but the loudest murmur was heard in the back between the left scapula and spine. On both sides a large artery (equal to the radial) was felt along the vertebral border of the scapula, largest on the left side. The autopsy showed a large heart, with aortic incompetence, and a stenosis of the isthmus of the aorta (just beyond the left subclavian) produced by an obturating membrane with small central orifice. Strangely, the arch was not dilated but rather narrow.

The patient had presented the characteristic peculiarity of strong arterial pulsation in the upper limb and reduced pulsation in the arteries of the lower extremity. It seems as though he might have long survived had he not suffered from acute rheumatism at the age of twenty-five years, with fatal damage to the valve. Fifteen other cases are referred to. Baudel⁵ also describes a case of *narrow aorta*.

CONGENITAL NARROWNESS OF THE AORTIC SYSTEM is, according to Burke,⁶ a definite source of disease not only in the shape of premature

¹ Journal of the American Medical Association, March, 1902.

² Archives of Pediatrics, March, 1902.

³ Ibid.

⁴ Rev. de Méd., February 10, 1903.

⁵ Deutsche Arch. f. klin. Med., Band lxxii., Hefte 3 und 4.

⁶ New York State Journal of Medicine, October, 1902.

arteriosclerosis, but in the resulting cardiac hypertrophy and dilatation and in their progressive consequences. Undue narrowness of the arterial system, whether arising from congenital fault or from arrest in growth, means a markedly lessened resistance to the risks of infection.

ANEURISM IN RELATION TO AORTIC HYPOPLASIA. Four cases of this association are brought forward from the annals of St. George's Hospital by W. Lee Dickinson,¹ who suspects that hypoplasia may be the explanation of aneurism in some cases of obscure derivation, as in women and children.

TRAUMATIC RUPTURE OF AORTA. E. J. McWeeney² reports an unusual case of rupture of the aorta and pulmonary artery resulting from a fall of twenty-five feet. The four upper right ribs were broken, but there were no external marks of direct violence to the chest.

SYPHILITIC AORTITIS. Huchard,³ who believes in aortitis as one of the causes of anginal pain, describes a case treated for angina on which he based a diagnosis of syphilitic aortitis upon the high arterial tension, the arteriosclerosis, the loud, metallic character of the diastolic murmur, and the therapeutic effect of biniodide of mercury.

SCLEROSIS OF THE AORTA has its origin in some previous inflammations. L. R. Korczynski⁴ believes in the occurrence of acute and sub-acute attacks of aortitis strictly analogous to endocarditis, and eventuating in chronic sclerosis.

AFFECTIONS OF THE HEART AND AORTA IN TABES. The association of heart disease with tabes dorsalis had not been insisted upon prior to P. Arullani's⁵ paper. Clinically the chief features in his cases were tachycardia and aortic dilatation, together with aortic murmurs and a lowered pressure. Arteriosclerosis was prematurely developed in the younger patients and severe in the old, in some cases leading to aneurism. Syphilis he regards as the cause of the tabes in the majority of cases, other sources of vascular disease (such as alcohol, malaria) being noted in a small minority.

PULSATILE AORTA AND ITS TREATMENT are discussed by Huchard.⁶ He dwells upon the occurrence of definite crises, particularly in connection with functional abdominal disturbances, and in visceroptosis and exophthalmic goitre. Convallaria, hydrobromide of quinine, and ergotin form a useful combination. Ice to the epigastrium may relieve the pain. In general, mild vasoconstrictors are indicated. *Abdominal aortitis* is also dealt with by Teissier.⁷ Pulsation of the aorta is gener-

¹ Lancet, August 9, 1902.

² British Medical Journal, January 31, 1903.

³ Journ. des Praticiens, January 17, 1903.

⁴ Wiener klin. Rundschau., May 18 to June 29, 1902, No. 23.

⁵ La Riforma Med., November 6 and 7, 1902; Rev. de Neurologie, October 30.

⁶ Journ. de Méd. et Chir. Pratiques, July 10, 1902.

⁷ Semaine Médicale, November 26, 1902.

ally described in connection with the abdomen, but it may be well to bear in mind that it need not be limited to that region, and that as a fact the thoracic aorta is of greater length than the abdominal.

Stenosis of the Superior Vena Cava and of the Right Pulmonary Vein. The clinical and pathological aspects of a fatal case of indurative *mediastinopericarditis*, perhaps of syphilitic origin, causing fibrosis and obliteration of these two veins are given by T. W. P. Lawrence and H. Batty Shaw.¹ The history of the symptoms coupled with the post-mortem appearances render the case of value.

Arterial Sclerosis. VISCERAL ARTERIOSCLEROSIS. A praiseworthy attempt is being made to identify clinically the localizations of arteriosclerosis. This has long been practised in the case of the cerebral arteries. Why not, therefore, follow the same study in connection with the spinal cord, the thoracic and the abdominal viscera? Adler² remarks that in addition to the forms affecting the heart, the kidney, and the brain there are two other important types which have been overlooked. The arteriosclerotic affections of the spinal cord may simulate tabes and other chronic diseases. And, again, the abdominal organs could hardly escape the degeneracy which necessarily follows vascular disease, and doubtless much of their failure in function might be traced to the latter. At the same time the attempt to define a clinical group of "gastrointestinal arterioscleroses" seems to lie beyond the present scope of clinical pathology. This bolder step has, nevertheless, been taken by Ortner,³ who describes an "Intermittent Angiosclerotic Dysphagia of the Intestine." This he compares to intermittent claudication, in connection with a case where the condition was diagnosed during life owing to the intermittent character of the abdominal symptoms. The existence of mesenteric arteriosclerosis was proved after death.

Neutra,⁴ Bierring,⁵ Windscheid,⁶ Grassmann⁷ and others also deal with the clinical localization of arteriosclerosis; and Grassmann refers to the occurrence of intermittent claudication. Diabetes is, according to his view, to be attributed to sclerosis of the pancreatic arteries.

THE ETIOLOGY OF ARTERIOSCLEROSIS is still under study. Rabe⁸ contends that the affection is capable of derivation from acute rheumatism, which he believes sets up a proliferative endarteritis and mesarteritis in the course of the more virulent rheumatic infections.

¹ British Medical Journal, February 21, 1903, p. 431.

² New York Medical Record, May 10, 1902.

³ Wiener klin. Wochenschrift, Band xv., No. 44.

⁴ Centralblatt für d. Grenzgeb., Nos. 18 and 22.

⁵ Iowa Medical Journal, Des Moines, December 15, 1902.

⁶ Münchener med. Wochenschrift, 1902.

⁷ Ibid.

⁸ Presse Médicale, 1903, No. 78.

THE TREATMENT OF ARTERIOSCLEROSIS BY TRUNECEK'S SERUM. This remedy is extolled by Levi and by Merklen as a tonic for *asthenia*, hyperexcitability, cardiac dyspnoea, and cardiac neuralgia dependent upon arteriosclerosis. Levi finds the "mineral powders" equally efficacious when administered per rectum as when taken internally. They consist of :

Sodium chloride	10.00 parts.
Sodium sulphate	1.00 part.
Calcium phosphate	0.75 "
Magnesium phosphate	0.75 "
Sodium carbonate	0.40 "
Sodium phosphate	0.30 "

Each powder of one gramme (15 gr.) is said to contain as much salts as 150 c.c. (3v) of blood serum. Remarkable results are reported by these authors after various courses of powders up to 125. Zanoni and Latters¹ also had three satisfactory cases of arteriosclerosis under the same treatment.

Arterial Blood Pressure. THE CLINICAL VALUE OF BLOOD-PRESSURE MEASUREMENTS. We cannot refrain from a mention of a practical paper by J. M. Jackson,² who publishes a number of interesting observations made with Gaertner's sphygmomanometer. The blood pressure in young healthy men ranges from 100 to 130 millimetres of mercury, but may be as high as 150 millimetres. In young women it ranges from 90 to 110 millimetres. Elderly persons almost always have a high blood pressure. Thus in a person aged fifty years a pressure of 175 millimetres is not ominous. Pressures of 200 millimetres are not infrequent and should be regarded as dangerous, while pressures of 250 millimetres are very dangerous. Of this fact striking instances are given.

"THE RISE OF BLOOD PRESSURE IN LATER LIFE" was the title of a paper read before the Royal Medico-Chirurgical Society of London (January, 1903) by Clifford Allbutt. The extent of the correspondence which ensued in the *Lancet* is an unmistakable sign of our relative ignorance. The position taken by the various correspondents is admirably put by Harry Campbell :³

"The chief points at issue refer to (1) the situation of the morbid resistance, whether chiefly in the arteries or capillaries; and (2) the nature of the resistance, how far it is attributable to active vascular contraction and how far to augmented frictionality of the blood. Broadbent holds that it 'has its primary seat in the capillaries,' and that

¹ Gaz. deg. Osp. delle Clin., January 19, 1902.

² Boston Medical and Surgical Journal, February 26, 1903.

³ Lancet, February 14, 1903, p. 473.

it is due to an alteration in the blood which so influences the vital reaction between that fluid and the capillaries as to interfere with the normal easy flow through these vessels; he assumes, as it were, an increased vital frictionality. Allbutt attributes the morbid resistance to an increased viscosity of the blood, by virtue of which (presumably) its mechanical (as distinguished from vital) frictionality is increased, while he is not disposed to assign to active vascular narrowing any influence in effecting a long-sustained high pressure. Finally, Sir R. Douglas Powell and William Russell place the chief resistance in the arteries and attribute it to a generalized hypertonus of them."

The novelty put before us under the name of "increased viscosity of the blood" does not seem to be supported by any available basis of experience. The strongest reflection upon it is Clifford Allbutt's own remark: "But who will try the experiments?" Our present choice lies finally between theories. We are bound by the demonstrable physiological fact of the contractility of arterioles upon stimulation. The other views are not yet based upon experimental proof and, therefore, cannot command our acceptance.

It would be presumption to speak dogmatically for or against any of the alleged causes, but we should not lose sight of the fact that the leading change in old age is universal atrophy. If softness of pulse and freedom from undue pressure are characteristics of a free way through an undiminished capillary system, blood pressure may be expected to rise in proportion to any advancing contraction of the total sectional capillary area. This pervading atrophy with great numerical loss of capillaries has long attracted notice as the senile feature special to the lesser circuit in connection with "small lung emphysema;" but it is evident that senile atrophy is not limited to the pulmonary tissues, and that, so long as the bulk of the contents of the vascular system is not exceptionally decreased, the pressure within it must tend to increase. For the present writer there is something even more telling than a mere loss of capacity, viz., the large aggregate loss of capillary elasticity entailed by the progressive involution at the periphery. Loss of elasticity was referred to by Sir R. Douglas Powell and others in connection with the senile hardening of arteries, but the senile reduction of the capillary elastic area is perhaps a more important factor in the problem.

The treatment of senile arterial overpressure, briefly referred to in Clifford Allbutt's paper, is important in view of the gravity of the dangers inseparable from it. The most simple, the most prudent, and the most essential treatment is the regulation of the bowels and the management of the diet and of the digestion. Drugs are not without their use, but they come in second line, and should not often be called for if these primary indications are fulfilled.

THE "TACHE BLANCHE" TEST. Hallion and Laignel-Lavastine¹ have devoted much labor to elaborate into a working test for the relative activity of the capillary circulation of the skin the varying duration of the ischæmic patch elicited by the observer's thumb, preferably in the first dorsal interosseous space of the patient's hand. In spite of a number of modifying agencies which cannot always be excluded, they believe that this reaction works on parallel lines with the variations of capillary pulsation and of arterial pressure. The practical value of this new method has yet to be established.

A DETERMINATION OF VENOUS PRESSURE has its uses, although it cannot be regarded as of equal importance with a determination of arterial pressure. Von Frey has made a systematic study of the subject, and has constructed an instrument which has enabled him to measure the pressure in the veins of a large number of subjects. In the veins at the back of the hand it is found to average from 10 to 20 grammes, while the pressure obtaining in the radial artery is between 300 and 450 grammes. He confirms the clinical experience that the variations in venous pressure are more rapid than those in arterial pressure, and may be turned to account as more delicate indications of the state of the circulation and of the effect of remedies.

Some Unaccountable Dropsies. AN ESSENTIAL OR TOXÆMIC DROPSY OCCURRING IN CHILDREN has been observed by George N. Acker.² It consists of a general œdema independent of any recognizable kidney disease or even heart disease, although following the distribution of a renal dropsy. His idea is that there may be a primary gastrointestinal disturbance leading to some toxic interference with the capillary function. He suggests as an alternative explanation a chemical alteration in the quality of the blood. We should not, however, in these mysterious dropsies lose sight of the possible toxic action upon the heart itself as well as upon the kidney.

EPIDEMIC ŒDEMA. In the same connection attention may be called to an interesting report on thirteen cases of œdema in infants, apparently epidemic, observed in the Providence Lying-in Hospital by Halsey de Wolf.³ He suspects a toxæmic affection of the kidney originating in some gastrointestinal irregularity. The etiology of these cases is so obscure that they need to be considered in their possible relations to cardiac and vascular pathology while not losing sight of the share which belongs to the kidney and to the lymphatics in most cases of generalized œdema.

¹ Bull. et Mém. de la Soc. des Hôp. de Paris, February 5, 1903.

² American Journal of Obstetrics, August, 1902.

³ Archives of Pediatrics, December, 1902.

Aneurism. THE ETIOLOGY OF AORTIC ANEURISM is considered by W. Lee Dickinson¹ in connection with congenital hypoplasia of the aorta as a predisposing agent. Where it exists (and we are told that it is most frequent in women) it may also influence the prognosis of rupture, and this may account for the relatively more rapid course of aneurism in women and for the markedly greater proportion of rupture in them. Though hypoplasia does not always or even generally imply hæmophilia, it may at least constitute an ominous link between aneurism and a deficient coagulability of the blood which would render more remote the prospect of any consolidation of the aneurism.

ANISOCORIA AND THE DIAGNOSIS OF THORACIC ANEURISM. The causes apt to produce disparity in size of the pupils are so various that this symptom when it exists loses much of its positive value. R. C. B. Wall and E. W. A. Walker² do not consider the explanation of interference with the sympathetic satisfactory, but suggest that an uneven blood pressure in the right and left ophthalmic arteries may be a better one, since a high blood pressure is accompanied by small pupils.

Sir William Gairdner,³ in discussing the question, says: "So far from becoming convinced that inequality of the pupils is in all cases due to implication of the sympathetic, I became convinced that slight and variable degrees of disparity (which were far from being rare) were almost of no account in the diagnosis, it being a not unusual experience to have the larger of the two pupils on the aneurismal side and variations taking place in this respect in the same case at different times."

NOTES ON ANEURISM. William Osler⁴ opens up questions of practical interest on the following subjects: 1. Arteriovenous aneurism of the subclavian vessels. 2. The humming-top murmur in thoracic aneurism. 3. On the value of the fluoroscope in the diagnosis of obscure cases of thoracic aneurism. 4. On the importance of careful inspection of the chest in thoracic aneurism.

1. *Arteriovenous aneurism of the subclavian vessels* is compatible with life, as shown by Osler's "bullet-wound" case and by the conclusions drawn by Matas⁵ from a study of fifteen cases. As to the prognosis, eleven of fifteen cases survived the immediate effects of the injury and of the aneurism. The physical signs in the "bullet-wound" case included, beside the hen's-egg-sized tumor, a universally audible "humming-top" murmur. In this patient the right pulse was difficult to feel.

2. *The Humming-top Murmur in Thoracic Aneurisms.* The mechanism of production and the diagnostic importance of this murmur are

¹ Lancet, August 9, 1902.

² Ibid., July 12, 1902.

³ Ibid., July 19, 1902.

⁴ Journal of the American Medical Association, June 7, 1902.

⁵ PROGRESSIVE MEDICINE, March, 1902.

sufficiently exemplified in the preceding case and in the case reported by Pepper and Griffiths,¹ in which a small aneurism of the ascending aorta communicated with the superior vena cava by an opening three-quarters of an inch in length. Osler mentions having heard it in imperfect closure of the ventricular septum. Its chief diagnostic use in my own experience has been in patent ductus arteriosus, which is less rare and less fatal than aneurismal rupture into the superior vena cava. Of this Osler gives two examples, and Pepper and Griffiths have recorded twenty-nine instances.

The characteristic qualities of a murmur produced by a communication between an artery and a vein are said to have been first described by Thurnam in 1832 and 1833; they consist in the continuity throughout systole and diastole, in the systolic reinforcement, and in the venous character of the murmur, which often resembles the venous hum heard over the jugular vein. The question has also received attention from Gairdner.² An analogous case has been reported by Syers,³ in which a latent aneurism of the aorta first showed itself by signs of rupture into the superior vena cava.

3. *The use of the fluoroscope in the diagnosis of thoracic aneurism* is sufficiently explained by a summary of Osler's cases. It is most to be valued in the class of aneurism which gives symptoms and no physical signs. On the other hand, it must be recognized that occasionally uncertainty attaches to the interpretation of a shadow and that a mistake may be made such as that recorded by R. Kuckein,⁴ in which a tumor which showed expansile pulsation with the X-rays, and which in other respects resembled an aneurism, proved after death to be a carcinoma involving the middle third of the œsophagus.

4. *The importance of a careful inspection of the chest*, including the back, is rightly insisted upon. Osler dwells in particular upon palpation for any pulsation. In this connection it is well known that the safest form of auscultation for aneurism is that of direct application of the head to the chest, or at least the use of the rigid stethoscope, which is capable of conveying solid vibrations.

Pulsation in the chest, on the other hand, may be due to other causes than aneurism. A. R. Edwards⁵ records a case of pernicious anæmia in which there was diffuse expansile pulsation over the chest resembling an aneurism, but an autopsy failed to give any adequate explanation of the condition.

¹ Transactions of the Association of American Physicians, vol. v.

² Glasgow Hospital Reports, 1899.

³ Lancet, November 8, 1902.

⁴ Deutsche med. Wochenschrift, November 6, 1902.

⁵ Journal of the American Medical Association, May 24, 1902.

Rhythmic jerking of the head has been observed by Valentino¹ to be occasionally associated with aortic aneurism and also with aortic regurgitation.

TRUE ANEURISM OF THE HEART is a rare affection. A case is described by Cominotti,² who points out that though it sometimes arises from an aneurism of the sinus of Valsalva or from a branch of the coronary artery, it may possess an etiology entirely distinct from that of the arterial form of the disease. Ulcerative endocarditis, gumma, or syphilitic myocarditis or fibrosis, and septic infections may all be the starting point of the progressive affection.

ANEURISM OF VALVE. An important contribution to the subject is the case related by Friedrich Kraus³ of aneurism of the right sinus of Valsalva rupturing into the right ventricle. The man was only twenty-seven years of age, and attributed his trouble to overexertion during military service four years previously; but Kraus rightly points out that chronic aortic disease is the usual antecedent. The heart was hypertrophied and dilated as a whole.

RUPTURE OF AORTIC ANEURISM INTO THE SUPERIOR VENA CAVA. Reinhold⁴ in his two cases describes the same distinctive continuous murmur, with recurring systolic whirring, which Osler calls the "humming-top" murmur. They were peculiar in not presenting any venous pulsation in the neck. One of the patients survived only two days, the other four weeks.

A continuous "circular" murmur is also described by H. W. Syers,⁵ whose patient survived one month. The dyspnoea and discomfort were several times relieved by venesection (fifteen to twenty ounces). No mention is made of the color of the blood flowing from the vein on those occasions, nor whether, as in a case of my own,⁶ it issued in arterial jets from the vein.

THE TREATMENT OF ANEURISM. Creditable success is reported in a case of large aneurism, treated by Romano⁷ for upward of fifteen years, from the adoption of a simple common-sense method of relief, viz., careful and regular attention to the bowels, with a light milk and vegetable diet; sodium iodide to reduce blood pressure, and abstention from tobacco and alcohol.

Gelatin in concentrated solution has been used by Harmsen.⁸ In the case of an aortic aneurism 22 grammes (5vss) were injected in the

¹ Revue de Médecine, May, 1902.

² Wiener klin. Wochenschrift, June 12, 1902.

³ Berliner klin. Wochenschrift, December 15, 1902.

⁴ Deutsche Arch. f. klin. Med., Band lxxi., Heft 6.

⁵ Lancet, November 8, 1902.

⁷ Gaz. d. Ospedali, August 7, 1902.

⁶ Ibid., June 15 and August 17, 1889.

⁸ Archiv f. klin. Med., Leipzig, lxxii.

course of eleven weeks, the weekly injection consisting of 10 c. c. (Züss) of a 20 per cent. solution.

The cure of an abdominal aneurism by three injections of artificial gelatinized serum is reported by Dusolier.¹ The first injection of 150 grammes (f3v) contained 1.5 grammes (22 grs.) of gelatin; the second, given a week later, contained 3 grammes (45 grs.) of gelatin in a total bulk of 200 grammes (f3vj). Nine days after this the third injection of 200 grammes (f3vj) of serum containing 2 grammes of gelatin was given. Pyrexial attacks of increasing severity occurred after each injection, but all the symptoms and signs rapidly disappeared.

Germ-free Injection Gelatin. While the value of gelatin remains undoubted—and of this some of last year's contributions afford fresh evidence—the check which Lancereaux's method has received through the induction of tetanus in a number of cases has not, perhaps, been an unmixed evil, as it may render impossible in the future the injection of any gelatin except such as shall have been thoroughly sterilized and tested on susceptible animals by responsible experts. Another incidental gain has been the increasing medicinal use made of gelatin by the mouth and per rectum. Clinical experience is accumulating in this direction, but it is still a question whether the internal administration is a therapeutical equivalent for the subcutaneous use of gelatin.

Incision and Obliteration as a Radical Cure. Fresh hopes for the cure of peripheral aneurisms will be raised by Matas'² radical operation, which consists in rendering the limb bloodless by Esmarch's bandage, opening, evacuating, and cleaning the sac, and suturing all orifices opening into it. The cavity is then obliterated by folding the wall of the aneurism into the sac, with the skin attached; but it is not obvious, unfortunately, how this method can be carried out in aneurisms of the aorta.

THE PERICARDIUM.

The Varieties of Pericarditis. The fatal significance of pericarditis supervening in Bright's disease is well known. It is insisted on by Herman B. Allyn,³ whose verdict "invariably fatal" is probably too severe. A recent case of my own recovered only partially after pericardiotomy, but the operation was undoubtedly the means of prolonging life.

Allyn also calls attention to some points which may aid in the diagnosis, such as the X-rays and exploratory puncture, which he thinks

¹ Arch. de Méd. et de Pharmacie Militaires, June, 1902.

² Annals of Surgery, February, 1903.

³ Pennsylvania Medical Journal, December, 1902.

harmless if properly carried out. This operation may, however, be scarcely worth performing where it is obvious that the pericarditis is simply the beginning of the end.

Another rather hopeless variety of the disease is *tuberculous pericarditis*, for which Robinson¹ knows no efficacious drug. He is in favor of paracentesis when effusion takes place, but points out that if aspirations should be repeatedly performed damaging adhesions may occur.

The case of *purulent pericarditis* complicated by empyema reported by George A. Peters and Robert D. Rudolf² is of interest chiefly in connection with the immediate relief to urgent symptoms afforded by the evacuation of the pericardial accumulation, and with the multiple incisions which had to be made on either side of the sternum before the latter could be reached.

THE TREATMENT OF RHEUMATIC PERICARDITIS is not so simple as that of other manifestations of rheumatism, all of which are successfully combated with salicylates. Huchard,³ in his paper on the medicinal treatment of acute rheumatic pericarditis, recommends sodium salicylate in large doses, to be administered continuously day and night for some time after the disappearance of the swelling of the joints. Probably in the majority of cases this may leave nothing to be desired, and the copious sweating induced by the salicylate will materially hasten reabsorption. We cannot, however, feel sure that the remedy will always be well tolerated. I have known a case in which the only apparent cause assignable for death was the depressing effect of the drug, and I have since then been inclined to withhold it in all cases where the effusion was considerable. Huchard admits that the fluid may have to be removed artificially; but among other remedies he places reliance upon venesection, digitalis, and theobromine. Before effusion has taken place, or in cases of dry pericarditis, Huchard trusts to local measures, such as scarification, ice, and methyl-salicylate, to a milk diet, and to opium and digitalis internally.

ADHERENT PERICARDIUM in its clinical bearings is the subject of a practical contribution to the *Medical News* of February 28, 1903, by George M. Swift. The author believes that with due care, such as private patients can afford, the prognosis need not be so unfavorable as it is held to be in hospitals.

THE SO-CALLED "FROSTED HEART" (Zuckerguss) was described some years ago by Curschmann. The case recorded by Eichhorst⁴ is of great interest, because in this instance the surface of the thickened

¹ Journal of the American Medical Association, June, 1902.

² Edinburgh Medical Journal, March, 1903.

³ Journal des Praticiens, November, 1902.

⁴ Deutsche med. Wochenschrift, April 17, 1902.

epicardium was smooth, as would occur in a pericardial sac untrammelled by adhesions. In the second place, it identifies the seat of production to the epicardial layer of the pericardium. Thirdly, it does not support Pick's view as to the mechanism of a continuous fibrosis involving the entire cardiac and hepatic area. At the same time the liver in this case was hardened as well as enlarged, and the idea of a combined heart and liver affection is not wholly disproved.

PARTIAL CALCIFICATION OF THE LEFT VENTRICLE over its anterior wall and over part of the septum was found after death in a case reported by von Pessel.¹ The detailed account given of the condition is of interest in connection with the coexistence of multiple swellings of the lymphatic glands. This necessitated an operation which almost proved fatal. The sclerotic myocarditis had led to a partial aneurism at the seat of calcification.

POST-RHEUMATIC AGGLUTINATION of the heart in juvenile subjects was diagnosed by L. Baume² and H. Huchard³ on the strength of the increased area of dulness, the systolic costal retraction, the fixation of the cardiac apex, the muffled heart sounds, etc. There was pain along the phrenic nerve in Huchard's case.

The moral which may be drawn from cases such as these is the urgency of an early and safe diagnosis. Pericardiotomy is now performed chiefly for the relief of fluid effusions. It will in no distant future probably be found available for clearing out the heavy, fibrinous deposits now allowed to remain *in situ* and ultimately converted into a thick and rigid fibrous cuirass which gradually stifles the heart. As already pointed out in these pages, the conditions in the pericardium are not identical with those of the pleura. The incompressible heart lends itself much less to make room for any large and sudden accumulation than the yielding and elastic lung, and its perpetual movement steadily favors reabsorption. So long, therefore, as the effusion is small the question of aspiration does not arise. Cases of the rapid occurrence of a moderate pericardial effusion or of its rapid and spontaneous disappearance are so constantly witnessed that we are not anxious to interfere early.

Porter⁴ recommends the removal of the fluid whenever there is clear evidence that the heart is undergoing progressive pressure.

PARACENTESIS OF THE PERICARDIUM. The best situation for the puncture is still a matter for debate. Fraenkel⁵ advocates tapping on the right side, about 3 to 3.5 cm. from the sternal edge, contrary to

¹ Münchener med. Wochenschrift, June 10, 1902.

² Archiv. de Méd. des Enfants, August, 1902.

³ Journ. des Praticiens, July 26, 1902.

⁴ Medical News, September 19, 1902.

⁵ Therap. der Gegenwart, April, 1902.

the usual teaching, which recommends the left fifth or sixth intercostal space close to the sternum. This method may some day be replaced by the more reliable and probably safer operation of pericardiotomy, particularly as the new procedure devised by Ogle and Allingham¹ renders a free opening of the pericardium a matter of greater ease and of slighter mutilation than previously.

DRAINAGE OF THE PERICARDIUM was successfully performed by H. S. Pendlebury² by Ogle and Allingham's method,³ in a patient, aged fifty-three years, suffering from chronic pericardial effusion. The advantages of the operation were also shown in a case of renal disease under the present writer's care, in which Mr. Allingham introduced a drainage tube, after exposing the pericardium through an incision in the epigastrium.

ACCIDENTAL PUNCTURE OF THE HEART in the operation of paracentesis of the pericardium is by no means always fatal. The chief danger is continued hemorrhage into the cavity of the pericardium, as in the case related by Byrom Bramwell in his *Clinical Studies*. Often, however, as in Dr. Sloan's case, to which he refers, the removal of blood is most beneficial. Cases of this kind are within my own experience. It has even been suggested that in desperate conditions this measure should be attempted as a last hope.

PARACENTESIS OF THE RIGHT VENTRICLE, from which cavity blood came in jets through the trocar, is reported by Seymour J. Sharkey⁴ in his lecture "On the Cardiac Muscle," etc. It had been performed unintentionally in search for pericardial fluid which was not obtained. The effect was most beneficial, the patient, a boy, aged nine years, improving rapidly in every way and losing the "enormous cardiac dulness" which had been, as I venture to think, correctly diagnosed by Sharkey as due to a pericardial effusion. The result led him to ultimately describe the case as one of huge dilatation of the heart, and to make the statement, to which I would not readily subscribe, that it is sometimes impossible to diagnose a much dilated heart from a pericardial effusion. The fact is that sometimes a moderate effusion coincides with a cardiac enlargement and gets the credit for the entire dulness. Even these cases are usually capable of a correct diagnosis, as in the instance of a pericardium incised and emptied by Mr. Allingham at my request because the heart also was known to be dilated. Surgical hemorrhage, which occurred during the operation, proved also in this case harmless and beneficial. But I have myself sometimes overestimated the amount of fluid, perhaps through insufficient examination.

¹ PROGRESSIVE MEDICINE, September, 1900 and 1901.

² Lancet, March 21, 1903.

³ Ibid., March 10, 1900.

⁴ Lancet, December 6, 1902.

THE HEART.

Physical Examination of the Heart. THE DETERMINATION OF THE RIGHT BORDER OF THE HEART is, according to C. A. Ewald,¹ more easily performed by auscultatory than by simple percussion, and this method is especially helpful to beginners, though experts can readily determine the border by ordinary percussion. He quotes his own original description of the method from the *Charité-Annal.*, ii. p. 194. G. Grote² in an important communication has arrived at the conclusion that the only reliable methods for a determination of the size of the heart are finger percussion and palpatory percussion. The divergence between these two authorities indicates how much of the individual factor enters into all questions of percussion and auscultation.

The sum of G. Grote's objection to auscultatory percussion is that it exaggerates the noise of mere percussion at the surface without increasing the fine differentiation in sound between the organs in the depth.

It is simpler and safer, he thinks, to trust to ordinary percussion, which has been shown in the dead body to be capable of outlining the heart (Oestereich and others). Grote devotes special attention to Reichmann's method and to Buch's modification of auscultatory percussion. He is no partisan of either, nor of Bianchi's phonendoscopic method, as the same fallacy underlies them all. At whatever point the chest-piece may be placed, this point becomes the centre of an area of loudness of sound, so that by using symmetrical spots on the chest or abdomen, symmetrical outlines are the result. He believes that we are simply measuring the distance through which the tension of the skin and other prevailing conditions permit the superficial vibrations to travel. The outlines which he produces as witnesses against these methods do not recommend the methods or the use which was made of them. On the other hand, it must be conceded that fallacies abound with every method and with every instrument if used imperfectly.

Is it reasonable to expect that the flute will play a correct tune without any training on the part of the player? According to my own experience, all these methods will be found of service if we know the scope of their usefulness and are skilled in their employment.

REDUPLICATION OF THE FIRST SOUND, from an analysis of 109 cases, is stated by A. G. Phear³ to be heard in association with (1) cardiac disease, chiefly mitral regurgitation; (2) arterial disease, due chiefly to strain or lead poisoning, or associated with renal trouble; (3) pulmonary lesions, for the most part emphysema, with or without

¹ Deutsche med. Wochenschrift, May 15, 1902.

² Ibid., March 27, 1902.

³ Transactions of the Royal Medico-Chirurgical Society, November 11, 1902.

bronchitis; (4) anæmia, chiefly of chlorotic type; and (5) dyspepsia. It was not so often found in albuminuria as is sometimes claimed. Phear does not admit Potain's idea of an interpolated presystolic sound, but believes that the reduplication occurs within the systolic period, and is to be regarded not so much as two separate sounds as two accents occurring in one long sound. Its mechanism is an asynchronism in the occurrence of tension of mitral and bicuspid owing to a disturbance of the relation of the intraventricular pressures, arising either in the right or in the left heart. This reduplication is not uniformly indicative of impending failures.

Drummond, on the other hand, insists upon the value of reduplication of the first sound as an indication of renal trouble and of beginning loss of compensation. In these patients a systolic mitral murmur may often be induced by placing the patient upon his left side.

As regards the mechanism of reduplication of the first sound as observed in acute nephritis, Sibson's experiment with the differential stethoscope localizes its production in the right and left ventricles respectively. Phear's view of asynchronous valve tension involves no hypothetical dissociation of one ventricle from the other in respect of muscular papillaries. *A priori* it would appear that closure of the valves must be completed as a preliminary to the pressure necessary for the valve tension sound. Reduplication really signifies a lengthening of the period between the closure and the sound in one of the ventricles. Again, if the systole of the relatively burdened ventricle were prolonged the closure of the semilunar valves would be delayed, and the double first sound would be followed by a double second sound.

REDUPLICATION OR CLEAVAGE OF THE SECOND SOUND is, according to Galli,¹ always a sign, and an early sign, of cardiac fatigue, valuable alike for diagnosis and treatment. His conclusions are derived from 300 observations. The soldiers examined gave pulmonic reduplication in a proportion of 19 per cent. in the morning, of 40 per cent. in the afternoon, and in 58 per cent. in the evening. This indication for cardiac rest should be looked for even in health, but specially in phthisis, convalescence, anæmia, and hard work. It may be heard in the second or third space to the left of the sternum.

"CARDIAC BRUIT AS A NEUROSIS" is discussed in Herman H. Hoppe's² paper on "Neurosis of the Heart." The heading is startling, but it is to a great extent justified by the remarks. The term "hæmic" is premature as regards any justifying evidence, and it may turn out to be wrong. On the other hand, it may be said for the term "functional" that it does not prejudge the question. Among such functional mur-

¹ Münchener med. Wochenschrift, June 10, 1902.

² Journal of the American Medical Association, May 24, 1902.

murs there may be those which conceivably may depend upon irregular or defective innervation. Sansom has advocated the view taken by Hoppe, that there is a nervous derangement of the mechanism of the heart action apt to produce valvular incompetence and murmur.

THE CAUSATION OF THE PRESYSTOLIC MURMUR OF MITRAL STENOSIS. The present state of the problem is presented in an instructive if somewhat discouraging light by the papers of Samways¹ and of E. M. Brockbank.² The latter champions the theory that the presystolic murmur, which he aptly terms "crescendo murmur," is due to the contraction of the ventricle and is, in fact, regurgitant. Samways, who upholds the other view, asks the questions: "May the auricle in mitral stenosis cases have its contraction prolonged into the time when the ventricle is contracting, and if so, can the contracting auricle force the blood forward if necessary in spite of the ventricle?"

To this criticism Brockbank answers that to suppose that there is a delay in the ventricular act of closing the valve does not imply that this closure does not take place; and the murmur with ascending pitch remains ventricular-systolic in time. He therefore reasserts his view that this peculiarity of sound is due to the stenosed mitral being very gradually narrowed until it is finally closed by the systole of the ventricle.

He asks of the supporters of the onward mode of production, "Why does a crescendo murmur never originate in aortic stenosis where the conditions are analogous?"

A. G. Phear³ believes that in advanced stenosis the stiffened mitral is incapable of tension sound, and attributes the well-known loud first sound to excessive tension of the tricuspid.

THE MECHANISM OF CARDIOPULMONARY MURMURS may be still regarded as debatable. Possibly it may not be the same in all cases.

Poliakoff's⁴ case, in which the murmur was produced at will by holding the breath, seems to be analogous to the usual cases in which the sound is best explained as the result of a systolic pressure upon the elastic tissue driving the air out through the bronchioles rather than, according to Potain's theory, by air being forced from the bronchi into the alveoli.

THE CERVICAL VENOUS HUM AND THE BLOOD COUNT. C. N. B. Camac's⁵ observations in twenty-two cases of anæmia are consistent with the time-honored view that thinness of blood is the cause of the murmur, but they do not seem to settle the question in a final manner.

¹ Edinburgh Medical Journal, 1902, pp. 129-133.

² Ibid., pp. 443-452.

³ Lancet, December 6, 1902, p. 1538.

⁴ Med. Obozr., 1902, vol. lviii., No. 18; Philadelphia Medical Journal, March 28, 1903.

⁵ Journal of the American Medical Association, December 6, 1902.

A VENOUS HUM OVER THE HEPATIC AREA in a case of cirrhosis is described by v. Gambarati¹ in a man, aged forty-nine years. It was loudest over the xiphoid and audible up the sternum, and it presented two crescendos, the louder one corresponding to cardiac diastole. Perhaps it arose in the vena cava from constricting fibrosis.

Congenital Affections of the Heart. Comparatively little attention has hitherto been given to the practical side of this subject, the contributions to it in literature including more records of post-mortem examinations and descriptions of specimens than studies of the clinical behavior of the cases from which useful conclusions might be drawn. It is true that much writing has been devoted to the question, which recurs with each individual case, as to whether the affection was developmental or inflammatory, the result of a malformation or of a fetal endocarditis. An answer to this might serve as a guide to clinical management of the case. Too often it cannot be obtained even at the autopsy, though in a limited number the evidence of malformation is obvious.

TREATMENT. The general remarks which have been made tend to the conclusion that clinically we should provisionally consider most cases of congenital disease as possibly belonging to the more amenable group, and adopt such measures as would tend toward general improvement of health and perhaps toward special improvement of the heart. The results obtained from a well-thought-out plan might indicate the direction in which further attempts should be pushed or avoided, and might bring into clearer light a distinction between those disabilities which were accidental and those of a structural and permanent nature.

CONGENITAL PULMONARY STENOSIS. Joseph Burke's² paper on this subject, based upon forty-four cases, makes an important suggestion in connection with the acknowledged frequency of pulmonary tuberculosis in this affection. This complication is found in the majority of those cases in which the aorta is abnormally narrow, but is not found in cases when the aorta is of wide calibre.

F. W. Andrews's³ case was quite unusual. In the heart exhibited a thick muscular septum separated the proper cavity of the right ventricle from the conus arteriosus, perforated only by a minute aperture admitting a good-sized probe.

PROBABLE PERSISTENCE OF THE DUCTUS ARTERIOSUS. The facts seem to point to this conclusion in the case (female, aged eleven years) reported by John E. Rhoads,⁴ which was free from cyanosis and clubbing. The skiagram shows a considerable extension of the base of the

¹ *Riforma Med.*, February 11, 1903.

² *Zeitschrift f. Heilk.*, vol. xxiii., No. 5.

³ *British Medical Journal*, January 10, 1903.

⁴ *Journal of the American Medical Association*, May 17, 1902, p. 1323.

precordial area toward the left ventricle. The thrill and double murmur perceived at the left second intercostal space, and the loud second sound in the same situation, suggest an occluded pulmonary orifice and the production of murmur and thrill in connection with the patent ductus Botalli.

PERSISTENT DUCTUS ARTERIOSUS. De la Camp,¹ in a paper based upon observations in a family of six children, all of whom were affected with symptoms of congenital cardiac defect, gives a minute description of the signs of patency of the ductus. In his patients there was no clubbing of fingers, although some cyanosis. In addition to the usual cardiac dullness there was a band of dullness to the left of the sternum 2 to 3 cm. in width and 4 cm. in length. He does not mention the continuous buzzing murmur with systolic intensities, but a loud systolic murmur over the pulmonary area with a loud second sound, while the aortic area gave clear sounds. Over the entire lung, but especially to the left of the spine, there was a systolic blowing sound, louder during the inspiratory than during the expiratory pause.

The screen showed broadening of the right cardiac shadow and also a broadening of the shadow of the great vessels toward the left.

OCCCLUSION OF THE RIGHT AURICULOVENTRICULAR ORIFICE. Opinions differ as to whether this extraordinary condition may result from an early endocarditis. This is the view taken by J. Mendez² in the case (male, aged twenty-six years) which he reports. In ten other cases from the literature, including a subject aged eight years, another aged two years, and a third aged twenty-eight years, the fetal endocarditis seemed to be the obvious cause; while of seven other subjects in whom it was due to malformation, the eldest died at the age of ten years. In F. W. Andrews'³ case there was complete absence of the right auriculoventricular orifice, with a double orifice on the left side, the right ventricle being rudimentary, the foramen ovale widely patent, the inter-ventricular septum perforated by a small aperture, and the ductus arteriosus practically closed. The two orifices connecting the left auricle and ventricle were provided with separate and well-formed valve curtains and chordæ tendineæ. Possibly this rare abnormality arose from faulty development of the three segments from which the septum between the right and left sides of the heart was formed.

The Valvular Affections. M. E. Satterthwaite⁴ gives us "a new study of *mitral obstruction*," with a careful analysis of the physical signs illustrated by cases.

¹ Berliner klin. Wochenschrift, January 19, 1903.

² Rev. Soc. Med. Argentina, Buenos Ayres, x., 53; Journal of the American Medical Association, May 31, 1902.

³ British Medical Journal, January 10, 1903.

⁴ New York Medical Journal, May 10, 1902.

Tricuspid affections are also dealt with by Satterthwaite, who thinks that tricuspid regurgitation is frequently overlooked, and draws attention to the chief diagnostic points, viz., a systolic murmur over the ensiform cartilage, epigastric pulsation, and a feeble second pulmonary sound. Cases of tricuspid stenosis are also discussed as well as the principal guides to its diagnosis. When it occurs it is generally associated with mitral stenosis, and it is chiefly found in women.

AFFECTIONS OF THE PULMONARY VALVES. Satterthwaite's¹ contribution to this subject is welcome not only because of the comparative infrequency of the affection, but because of its difficult diagnosis, too seldom seriously attempted. The clinical evidence as to any antecedent infective process, or as to imperfect development, is often a sufficient guide in distinguishing between the congenital and the acquired form; but should reliance have to be placed exclusively upon physical examination, the following points are regarded as distinctive of the acquired form: "1. Displacement of the apex. 2. Diastolic thrill in the second or third left space (in 20 per cent., Barie) from the edge of the sternum to a distance of one inch to the left of it, conducted down to the left edge of the sternum (Boyd). 3. Double murmur (in about 25 per cent.). 4. Diastolic bruit, intensified by inspiration. 5. Implication of the lungs. 6. Murmur intensified in the sitting position. 7. When a long breath is taken the vesicular murmur is jerky. 8. Hæmoptysis. 9. Dyspnoea. 10. Usually, but not always, hypertrophy of the right ventricle. 11. Epigastric pulsation. The pulse has no distinctive character. Often there will be no bruit at all; we must, however, discriminate against aortic valvular insufficiency by the absence of hypertrophy of the left ventricle and of the Corrigan pulse. The murmur should be lower than an aortic."

A case in which the symptoms were relieved by evacuating an abscess is suggestive. Temporary stenosis may occur from lateral pressure more often than is suspected.

AORTIC VALVULAR STENOSIS tests the diagnostician as aortic regurgitation tests the stethoscope. As pointed out by James M. Anders,² its recognition is easy when all its physical signs are present, viz., a small, slow, and somewhat tense pulse; a systolic basic thrill; an enlargement of the left chamber; a harsh and musical systolic murmur over the aortic area, and a feeble aortic second sound. But let some of the signs be absent and diagnosis becomes a matter of nicety. From the degree which aortic stenosis is apt to reach, and from its long duration, indicated by the calcification of the valve in the more advanced instances, it is clear, though strange, that a fairly efficient circulation

¹ Medical News, September 6, 1902.

² Medical News, May 10, 1902.

may be kept up through a marked constriction, and that the heart need not undergo any extreme change either in overgrowth or dilatation proportionate to the sometimes very striking stenosis. This can only be brought about by adaptations of fine order and of delicate labile equilibrium. The extent of this toleration and the precariousness of this adjustment seem to be a sufficient explanation for the contradictory facts that sudden death should neither occur early nor in all cases, and that it does ultimately occur when no intercurrent affection has interfered with the normal evolution of the disease.

THE PULSE WAVE IN AORTIC REGURGITATION is again discussed by Paul M. Chapman¹ in connection with his previous communication.² His tracings convince him that the heart-radial delay is not always shorter, as stated by Keyt, nor always longer (Broadbent) than normal, but varies with the cases. The normal heart-radial delay is about 0.18 second, and the normal heart-index delay about 0.20 second. The burden of the ventricle is so great in aortic regurgitation that the ventricular contraction is less by impact than like a steady push. This probably accounts for the fact that the radial pulse is not more frequently before time, and that a disappearance of the presphygmic interval is not more often accompanied by a shortening of the heart-radial interval. He believes that a study of sphygmograms from the point of view of this interval can furnish valuable knowledge as to the condition of individual hearts.

A further contribution to the subject is made in the *Lancet* for May 23, 1903, by Walter Broadbent, who publishes tracings in support of Sir William Broadbent's view that the duration of the delay bears a relation to the degree of the valvular regurgitation.

MUSCULAR INSUFFICIENCY OF THE MITRAL VALVE is the term applied by Williamson³ to the deficient closure of the valve, which is due to weakness of its muscular mechanism rather than to any insufficiency of the area of the membrane itself. Doubtless this explanation will fit many cases in which, after death, no coarse valvular lesion accounts for the sometimes loud murmurs heard during life, and this justifies the exhaustive treatment allotted to this subject by Williamson.

The acute form observed in fevers and in infective disorders is usually transient; but in the chronic form the defect is apt to entail or to be accompanied with progressive heart changes, which, like those due to structural valvular disease, may, after a period of compensation, ultimately lead to failure.

The anatomical and physiological data which have been contributed

¹ *Lancet*, December 28, 1902.

² *British Medical Journal*, February 16, 1901.

³ *Journal of the American Medical Association*, July 19, 1902.

by Romberg, Hesse, and Krehl on the normal mechanism of the mitral valve enable Williamson to give a lucid account of the mode of production of the valvular incompetence. This is not merely a dilatation of the mitral orifice and ring, but a partial failure of the function of the papillary muscles. He considers that myocardial degeneration is the cause in the greater number of chronic cases, and that in from 15 to 20 per cent. of instances of myocardial degeneration this form of incompetence follows. In the murmur itself there is nothing strictly distinctive. It is apical and systolic in time, and apt to disappear or to become lessened when cardiac action is increased. The murmur is often inconstant. As to the symptoms, they are those of "cardiac insufficiency of low grade," insidious in their development like the chronic interstitial myocarditis from which they are derived.

Cardiac Compensation and its Failures. EARLY FAILURE OF COMPENSATION. In recent cases Klemperer¹ recommends complete rest and small doses of a narcotic in preference to beginning with digitalis, which he thinks should be reserved until it is absolutely indispensable. Great benefit will then be derived from this drug. This is most valuable advice. For those with healthy hearts the prescribing of digitalis as a tonic or as a diuretic is a trivial matter; but in the treatment of cardiac disease digitalis is the trump card, which should not be thrown away if it can safely be held.

LIMITED COMPENSATION may exist for a long time in some cases of valvular defect. Thus in *mitral stenosis* years may elapse before a youth supposed to be healthy breaks down owing to influenza or intercurrent bronchitis, but it is then found that a well-developed stenosis of the mitral valve must have been present for a long period. As a fact, most cases are revealed at a fairly early date because the compensation is not unlimited. Sufficient for quiet work, it is inadequate for continued effort or for heavy strain or hurry, which set up, together with dyspnoea, the characteristic pain over the left ventricle.

The long history of many a case of simple *mitral regurgitation* of the ordinary valvular type proves that this lesion is, *par excellence*, one susceptible of compensation, though this is always a limited compensation. In both these groups the compensation is worked out by the right ventricle through the lung.

Another striking instance of limited compensation is afforded by *motor insufficiency* of the mitral valve. Cases of muscular mitral incompetence have been described by Charles S. Williamson,² which he suspects has existed for a long time in the compensated state before the

¹ Therap. der Gegenwart, April, 1902.

² Journal of the American Medical Association, July 12, 1902.

right ventricle became overworked and unequal to the strain. It is in the nature of things that in them the compensation should always be of a limited order. The treatment of all of them is guided in accordance with that fact.

In aortic valvular defects the work of compensation falls to the lot of the left ventricle, and it is at first sufficient and complete. Thus aortic valvular incompetence and stenosis both pass unobserved, and may be revealed only by severe and apparently sudden symptoms. This latency is especially marked in stenosis. As the left ventricle dilates additional compensation is required, and this duty falls again upon the right side. Cases of this kind display in a striking manner the structural alterations which the heart undergoes in the effort to remedy its mechanical defects.

The Myocardium. ESSENTIAL CARDIAC INADEQUACY as an individual peculiarity and quite apart from disease is a subject not absent from the mind of physicians, but of which little notice is taken in the literature. Were the practical importance of this individual factor more generally understood or attended to in practice we should hear less of the cardiopathies of youth. Together with mental and nervous inadequacy, cardiac inadequacy unfits the individual for the plan of life applicable to the greater number. In its extreme form, which I should venture to call "congenital myasthenia cordis," it is unmistakable; but slighter degrees might be recognized if more attention were called to the subject. Alexander Morison clearly grasps this idea when he says that a heart may be small and inadequate, though hypertrophied; and that the original adequacy or inadequacy of cardiac action underlies much of the success or failure of our treatment of diseases of the heart.

The individual factor is also put in the forefront by I. N. Snively,¹ in his prudent recommendations, together with the individual condition of the heart muscle at the given period. Drugs may not be needed if rest, food, light exercises, and mental repose and content will restore its physiological efficiency. Prophylaxis as regards the avoidance of the causes of myocarditis should be a constant care in the special case of those known to be of weak cardiac fibre.

CARDIAC DILATATION IN PUBERTY is of all forms of dilatation that which should enlist our attention, because it is so often remediable under proper treatment and so important to cure without delay. At this age we are not hampered with the hopeless factor of tissue degeneracy. Friedländer² devotes to it an important article. Doubtless muscular overwork when associated with poor feeding, as often happens with school-boys, is a sufficient explanation in some cases; but other factors

¹ Medical News, September 6, 1902.

² Colorado Medical Journal, August, 1902.

need to be regarded, especially the visceral and the psychical factors. Again, predisposition, both in the direction of cardiac and of general nervous susceptibility, must be considered. These would probably be recognized by Friedländer, but he specially dwells upon the main question whether the well-known symptoms—dyspnoea, debility, palpitations, pallor or cyanosis, disturbed sleep and digestion—are the outcome of purely functional dilatation, or of some serious myocardial defect, or of some lurking valvular mischief left over by an attack of some infective disease. The class to which Friedländer devotes special attention has the best prognosis. Dilatation from relative physical overwork has its remedy in rest and feeding, with the avoidance of much fluid. Digitalis and strychnine (more often the latter) are of use; but where the visceral, the psychical, or the nervous element is marked neither prognosis nor treatment are so simple. Cardiac irritability beginning at puberty augurs badly for the future, for it may be too readily aggravated by a continuance of the cause or by ill-advised exposure to relative overstrain or overexcitement, until the cardiac habit becomes inveterate and the case develops into one of juvenile cardiac neurasthenia. For all such the physician's best skill and experience are needed.

MYOFIBROSIS CORDIS IN RELATION TO UTERINE MYOMA. From his observations in a case of unusually large uterine myoma when the heart showed healthy vessels, but some myofibrosis, Kessler is impressed with the view that an affection of the heart is apt to follow in the wake of extensive uterine fibroid disease.

RHEUMATIC MYOCARDITIS. Theodore Fisher,¹ in relating two cases of fatty and fibroid degeneration probably due to the preceding attacks of rheumatism, throws out the idea that the micro-organisms may perhaps survive for many years not only on the valves, as shown by Poynton and Paine, but in the heart wall, and that this might explain the long history of such cases.

THE HEART IN PREGNANCY. According to Stengel and Stanton,² the idea that the heart is regularly hypertrophied during pregnancy is founded on the study of cases dying from puerperal septicæmia, and that due allowance has not been made for the effects of the septicæmia upon the heart. The German theory that the hypertrophy is only apparent and not real is also referred to, and the statistics regarding blood pressure during pregnancy are criticised. As a result of a study of heart and sphygmographic tracings the authors conclude that in pregnancy the outward displacement of the apex of the heart is due to displacement of the diaphragm upward from pressure; that there seems to be an increase

¹ British Medical Journal, September 27, 1902.

² Medical Record, May 10, 1902.

in size of the right side of the heart and of the conus arteriosus, and that these latter changes are responsible for the cardiac murmur which is so often heard in the later months of pregnancy. They do not think that any appreciable changes occur in the blood pressure.

Vertzinsky¹ records a study of twelve cases of pregnancy occurring in women with mitral regurgitation, and shows that while there may be a considerable mortality among the mothers, there is a large one among the children, more than half of them failing to live. While considering that the danger of pregnancy in heart disease is liable to be exaggerated, he lays stress on the increasing danger of subsequent pregnancies when previous ones have been attended with failure of heart compensation. As the birth is apt to be premature, the heart should be examined in all cases of repeated premature births.

THE EFFECTS OF STRAIN UPON THE HEART AND ITS VALVES. De Quervain² observes that the importance of this subject is increasing owing to the growth of industrial insurance. Doubtless a healthy heart may be injured by strain, but in nearly every case some predisposing cause, and particularly antecedent disease, can be traced for the lesions. As might be expected, it is almost always the left side of the heart that suffers, and the aortic valves are twice as often affected as the mitral. Usually the exciting cause of the lesion is some sudden and violent effort rather than a prolonged steady strain. This was the history of the case related by De Quervain. The sudden onset of pain, followed by epistaxis and cyanosis and dyspnoea, suggested ruptured valve. Symptoms of ulcerative endocarditis ensued, and this was verified at the autopsy. The question arises whether the endocarditis may not have existed, as in some other cases, prior to the rupture of the chordæ tendineæ; but it must be admitted that although endocarditis does not always follow, its onset must be favored by previous rupture of valve or chordæ.

Another instance in which the clinical history bears an analogous interpretation is a case of aortic regurgitation reported by Jacobi, in which the symptoms developed suddenly, and the murmur then detected could be heard across the room.

ON THE SUBJECT OF PHYSICAL OVERSTRAIN AND ITS RESULTS upon the heart, bloodvessels, and other organs, G. F. Lydston³ has arrived at definite conclusions, which should be compared with the more immediate effects observed by Blake and Larrabee in the recent "Olympian" races and those observed three years ago by Stengel. Inordinate feats should never be attempted, particularly after the age of thirty years. Those who had indulged for several years in severe

¹ Bolnitchnaia Gazeta Botkina, June 26, 1902.

² Semaine Médicale, May 21, 1902.

³ American Medicine, March 7, 1902.

athletic competitions presented some degree of endarteritis, hypertrophy of the heart, emphysema, and slight renal and hepatic congestion. Fibroid and inelastic arteries are common in athletes in middle age. "Their arteries are older than those of the average man of the same age."

Muscular exercise for health and culture is safe, but straining after records is unnatural and dangerous. Death, profound prostration, or acute and even permanent cardiac dilatation may be the result of the supreme final "spurt."

Lifting heavy weights is frequently responsible for both cardiac dilatation and emphysema. With fibroid arterial thickening due to syphilis, alcoholism, or gout, any overstrain might cause aneurism of the aorta or great vessels. In most of the middle-aged athletes examined Lydston observed both dilatation and slight fatty degeneration of the heart. It was said long ago by Sir Benjamin Ward Richardson that there was scarcely a professional athlete in England who at fifty did not present symptoms of heart disease. Alcohol and tobacco should be avoided as likely to incite the subject to overexertion and to set up degenerative changes under the influence of severe athletic training.

PHYSICAL EXERTION AND THE HEART. Larrabee's¹ general conclusion, with which all must agree, is that in young and healthy subjects the normal effect of training is hypertrophy; violent exertion may temporarily alter the blood pressure and enlarge the heart and perhaps produce a transient murmur, but rarely cause dilatation, which is an abnormal result. "Irritable" heart is the result of habitual over-driving in the presence of some depressing influence or delicacy.

THE EFFECTS OF PROLONGED EXERTION UPON THE HEART AND ORGANS. The *Boston Medical and Surgical Journal* for February 19, 1903, contains a series of important observations made by J. B. Blake and R. C. Larrabee upon long-distance runners, including a study of the blood and of the urine. The blood presented more or less leucocytosis, the urine contained hyaline and epithelial casts, albumin, and a little blood, pointing to a temporary congestion possibly due to irritation by "the toxins of fatigue."

The rectal temperature was invariably raised. Both as regards rate and quality it is remarkable that only comparatively slight changes were noticeable either in the pulse or in the heart's action, except occasional slight irregularity or intermittence, or thready character in the few who showed signs of overexertion. The rate was always increased, but never considerably.

It is noteworthy that the heart usually enlarged from previous training became slightly more so from dilatation at the end of the run, and

¹ Boston Medical and Surgical Journal, September 18, 1902.

that murmurs were usually systolic and not uncommon. The original papers should be consulted for many other points of interest.

Pulse Rate and Exertion. The results of Grünbaum and Anson's¹ experiments are an entire confirmation of the clinical experience of physicians and of the physiological facts recently again demonstrated by the Marathon races. Individuals differ in their reaction, but the rule is for the heart to quicken immediately on exertion and to quickly slow down upon its cessation. Delay in slowing down, as previously laid down by Mendelssohn, is a sign of overfatigue. This gives us a practical means of determining the limit of work which is beneficial or free from damaging effects.

A. Smith² dwells upon the importance of carefully noting the variations in pulse frequency induced by exchanging the recumbent posture for the erect and *vice versa*.

IRREGULARITY OF THE PULSE, as pointed out by Patton,³ is capable of any degree of significance. In relation to insurance work it is a call to attention. Heart, kidneys, or bloodvessels may be diseased, but just as often they are not. It is clear, however, that the patient's safety demands that the peculiarity should not be too lightly passed over as trivial.

Endocarditis. THE VARIETIES OF ENDOCARDITIS. M. Litten⁴ criticises Lenhartz's statement that the presence of micro-organisms in the blood identifies the endocarditis as septic. He justly asks what would become of Lenhartz's views if the micro-organism of acute rheumatism came to be detected in the blood, as may well happen in the future. Litten provisionally classifies endocarditis into three sets—*benign*, *septic malignant*, and *non-septic malignant*—but he does not believe that the time has yet come to enable a classification to be based on the presence or characteristics of micro-organisms. Litten objects to the term "ulcerative;" it should be replaced by the term "septic." This form is characterized by suppuration of the thrombi and of any joints affected, while suppuration never occurs in joints or thrombi of the "non-septic malignant" variety.

Sanford Blum records a case of "pyocyaneus" endocarditis in an infant, which he believes to be unique.

THE RELATION OF THE MALIGNANT TO THE RHEUMATIC VARIETIES OF ENDOCARDITIS has been further studied by Poynton and Paine⁵ in a communication to the Royal Medical and Chirurgical Society. Their conclusion strikes us as plausible: it is to the effect that the

¹ Deutsche Archiv f. klin. Med., Band lxxi., Heft 6.

² Berliner Klinik, No. 166.

³ Medical Examiner and Practitioner, New York, May, 1902.

⁴ Deutsche med. Wochenschrift, May 22, 1902.

⁵ Lancet, April 12, 1902.

malignant forms differ only in degree from the other forms, and that the more severe lesions are capable of arising under the influence of virulent breeds of the common micro-organism of rheumatism.

Our comment is that even though this practical identity may not be absolutely demonstrated, it nevertheless carries a clinical lesson of the first importance. Prophylaxis against rheumatism is shown to be in a proportion of cases prophylaxis against a most fatal heart affection, and hitherto we have achieved almost nothing toward so urgent a duty. In what direction are we to look for the probability of results? Shall nothing be attempted? Though much may be urged against the intravenous method, yet it is, beyond doubt, the most direct route.

Attention should also be called to T. R. Glynn's¹ "Lectures on the Clinical Aspects of Infective Endocarditis," an important instalment to the natural history of the disease.

PNEUMOCOCCUS ENDOCARDITIS. Edward F. Wells² finds from massing statistics together that the proportion of endocarditis occurring in all cases of pneumonia is 0.3 per cent., while the percentage in fatal cases is 4 per cent. This is, he considers, an underestimate of the frequency of the two conditions. He lays stress on the endocarditis being usually on the left side of the heart; errors on this point have crept into the literature. The mitral is the chief valve to suffer, but the aortic cusps do not fall far behind in frequency. Distinguishing features are the massive character and broad base of the vegetations, with a tendency to ulcerate; the vegetations do not appear often to extend beyond the valves. Clinically, the heart lesions develop comparatively early in the disease, but are not always recognizable by physical signs, although a necropsy may show that the vegetations have been there for some time. Meningitis is a frequent complication. The duration in fatal cases is only a few days or weeks, but much more prolonged in those that end in recovery. An important point in prognosis is that there is little tendency toward cicatrization, so that recovery may ensue with little or no deformity of the valves.

G. Strada's³ estimate of the relative frequency of this complication is a much higher one (nine cases in eighty-five autopsies). The seat of the affection was in the left side of the heart alone in six cases, and in the right side alone in three cases.

A CASE OF ENDOCARDITIS, PERHAPS DIPHTHERITIC, was observed by J. W. Findlay.⁴ Acute mitral valvulitis—a rare complication—developed during diphtheria. Findlay believes that although the bacillus of diphtheria has been sometimes found, the endocarditis is

¹ *Lancet*, April 11, 1903.

² *Journal of the American Medical Association*, October 18, 1902.

³ *Lo Sperimentale*, Florence, lvi., No. 2. ⁴ *Glasgow Medical Journal*, January, 1903.

more likely due to other organisms, and specially to the pneumococcus. Was the serum injected in this case possibly responsible?

A CASE OF TUBERCULOUS ENDOCARDITIS AND SPLENITIS without any pulmonary tuberculosis is reported by Jean Ferrand and Rattery.¹ The presence of Koch's bacillus in the vegetations and in the blood was discovered by the inoscopic test of Jousset.

GONORRHOEA AND ENDOCARDITIS. Although, according to Charles Stedman Bull,² an intimate relation has been established for more than twenty years between some cases of gonorrhoea and endocarditis, it is only more recently that any systematic study of the subject has been carried out. Harris and Johnson³ report a fatal case in a negro, aged twenty years. The gonococcus was cultivated from the blood, during life and after death, both from the vegetations and from the blood of the heart. For a cultivation of the gonococcus from the blood during life it is not necessary to use much blood, to dilute it greatly, or to employ any specially prepared medium. It is better to mix the blood with melted agar than to use fluid media in which the oxygen supply is more restricted. The bactericidal power of the blood in inhibiting the growth of the gonococcus is slight compared to its effect on the typhoid bacillus and the pneumococcus.

THE PROGNOSIS OF ENDOCARDITIS. With the progress of serotherapy and of intravenous medication the prospect of ulcerative endocarditis is becoming less gloomy. This is the direct result of the labors of pathologists such as Achalme, Bannatyne, Poynton and Paine, who have demonstrated the infective nature of the disease and therefore pointed to antiseptics as its remedy. During the past year a more hopeful tone has prevailed. Several cases of recovery have been reported and papers have been read on the subject of the curability of the disease.

Samuel S. Adams⁴ case was brought forward as one of only four recoveries hitherto reported under the age of fourteen years.

J. B. Herrick⁵ considers that occasionally recovery may be expected. Clinically there is evidence of this, and post-mortem results also bear it out. It is, therefore, all the more desirable to differentiate between the different forms of endocarditis and to identify the micro-organisms by thorough examinations of the blood. A knowledge of this kind would place the prognosis and treatment upon a sounder basis. A paper was read before the Royal Medical and Chirurgical Society by myself and Arthur Morley in support of the same view. The three cases related

¹ Bull. et Mém. Soc. des Hôpitaux de Paris, February 19, 1903.

² Medical Record, December 20, 1902.

³ Johns Hopkins Hospital Bulletin, October, 1902.

⁴ Archives of Pediatrics, December, 1902.

⁵ Medical Record, May 10, 1902.

ended fatally, but the lesions seemed to be undergoing a process of repair.

THE TREATMENT OF ENDOCARDITIS has now for its object a most definite purpose, that of destroying the germs. For this two sets of remedies—the sera and the mineral germicides—are on their trial, as well as the three modes of their administration—the internal and rectal, the percutaneous and subcutaneous, and the intravascular. It is not unlikely that at a later date all three may be utilized for the more rapid subjugation of the attack.

As to the relative value of the agents themselves *a priori* conclusions have ceased to be trustworthy. We are from day to day realizing greater resources in the interactions of living and of inorganic matter—such, for instance, as the remarkable properties of radium—which make us less intolerant of our unavoidable attitude of expectancy in connection with the realm of the unproved. The promulgation of the theory of the catalytic action of albuminized metals as well as of sera is a further confession of ignorance; but on the assumption of the correctness of this “contact” theory, it is clear that the most direct application of remedies to the germs of disease would be the most rational. It is not, therefore, surprising that much enthusiasm should have been aroused in France by the publication by Netter and others of their encouraging results.

The Serum Treatment of Malignant Endocarditis. Cyril Ogle¹ has collected two series of cases in which antistreptococcus serum was used after the discovery of organisms in the blood or in the presence of the symptoms and signs of malignant endocarditis. The value of the injections is still uncertain; but he concludes, from a study of the cases: (1) that grave streptococcic infection, even of the blood stream, is not incompatible with recovery if treated by injections of antistreptococcic serum; (2) that this is true also in malignant endocarditis, but that here the chances are probably less favorable on account of the colony of micrococci involved in the vegetations in constant contact with the blood stream; (3) that in malignant endocarditis staphylococci are frequent, or a mixed infection of staphylococci and streptococci; and (4) that if an examination of the blood be negative it would be prudent, therefore, to use injections of antistaphylococcic together with antistreptococcic serum.

Intravenous Injections of Silver Salts for Septic Endocarditis. C. L. Klotz² reports a case in which the clinical symptoms warranted a diagnosis of septic endocarditis, and which recovered under treatment by intravenous injection of colloidal silver (collargol). The first two injections of 9 cgms. ($1\frac{1}{2}$ gr.) in a 1 per cent. solution were followed by rigors

¹ *Lancet*, March 14, 1903.

² *Deutsche med. Wochenschrift*, July 17, 1902.

and no improvement; but after a third (7 cgms. (1 gr.) only) a gradual improvement set in, the temperature fell rapidly, and a good recovery was finally made. The temperature chart attached to the case shows a remarkably rapid defervescence.

Simple rheumatic endocarditis is, in H. Huchard's¹ opinion, ill suited for the alkaline treatment—for mercury, bromides, opium, and other drugs, or venesection, scarification, and cold applications; all these may do harm. The remedies are sodium salicylate, which he believes prevents rheumatic endocarditis and should be continued for a good while, with such adjuncts as iodide of potassium, digitalis and hydrobromate of quinine, and mineral waters.

Intravenous Therapeutics. As the intravenous method is more closely connected with the treatment of the heart and lungs and of the vascular system than with that of any other organs, its consideration should not be omitted from this report. Its history, which has been one of gradual expansion, has passed during the last few months through two remarkable phases. J. M. Fortescue-Brickdale's conclusions, based upon laboratory work, recently published in the *Lancet* (January 10, 1903), are entirely unfavorable. In his hands none of the antiseptics injected into rabbits have availed to destroy the bacilli of tubercle unless used in such concentration as to prove destructive to life. He therefore summarily condemns the method as useless and only likely to do harm. And the results of intravenous injections of diluted formalin solution in septicæmic rabbits have been such as to lead W. H. Park and W. A. Payne² to suggest that a solution of plain salt and water may be found to be equally useful and less dangerous.

Meanwhile, at the close of the year 1902 the clinical value of the intravenous method had been prominently brought to the front in France, chiefly by Netter.³

Those who have given the method a trial, either in its more recent form—that of relatively bulky injections, which was introduced by Robert Maguire—or even with the smaller injections used by Landerer, are aware that they are not inert, but followed by definite effects which (putting aside any accidents) are distinctly favorable. Evidence relating to failures is not so apt to be published, but nevertheless the growing list of reported successes must command our attention. Special mention may be made, for instance, of the cases brought before the Société Médicale des Hôpitaux de Paris, during the early part of 1903, by Netter and others, in connection with the value of collargol in the treatment of pneumonia, endocarditis, and various other infective affections. The present writer had previously used protargol intravenously in phthisis and

¹ Journ. des Prat., October 11, 1902.

² Medical News, April 4, 1903.

³ Bull. et. Mém. de la Soc. des Hôp. de Paris, December 18, 1902, et seq.

also in pneumonia, with striking results; but his papers on the "Silver Treatment of Pneumonia" and on the "Silver Treatment of Phthisis," which had been presented to the Cheltenham meeting of the British Medical Association, July, 1901, were not read and have remained unpublished.

J. M. Fortescue-Brickdale deserves every credit for the definite results of his experimental research, and his observations on the germicidal coefficient of various solutions, which he has tested *in vitro* and by injection into animals, may be accepted as correct; but, as I suggested in a letter in the *Lancet* (January 17, 1903), we should not too rigidly adhere to a standard of germicidal potency as a test for the practical value of remedies. Intravascular antiseptics may be a delusion, but intravenous medication must remain as an independent and much wider subject. Indeed, this is proved by the failure of the germicidal effect.

THE CATALYTIC ACTION OF INTRAVENOUS INJECTIONS. Since the injections are inert against bacteria, they must be possessed of some other virtue to account for their undeniable power for good which it becomes our duty to investigate and to utilize. This mysterious action has recently been attributed to an equally mysterious property of matter. Netter and others have suggested that their probable mode of action is not bactericidal but catalytic.

In a second communication to the Société Médicale des Hôpitaux de Paris (January 22, 1903) Netter adds to the long list of affections in which he has found colloidal silver to be of decided benefit. He proceeds to explain that its virtues are not so much bactericidal as it was claimed by Credé, but of a totally distinct order. Bredig and his pupils have shown as far back as 1900 that colloidal metals, and in particular colloidal platinum, behave after the fashion of ferments—"by catalysis"—and after the fashion of ferments are capable of being inhibited by infinitesimally small doses of poisons, and regain their activity when the latter are removed. It is reasonable to assume that substances so active and reactive should be capable of rapid and energetic action when introduced into the blood.

On the other hand, F. Aporti and S. Aporti claim to have established by their clinical and experimental observations that, administered by the intravenous route, the inorganic preparations of iron are more effectual than the organic.

THE INTRAVENOUS INJECTIONS OF FORMALIN of Robert Maguire were noticed in the preceding reports of PROGRESSIVE MEDICINE. They have not formed the subject of many fresh publications. They were recently tried in cases of puerperal septicæmia by Charles Barrows.¹

¹ New York Medical Journal, January 31, 1903.

In one of the cases two injections of 500 c.c. (16 f3) and of 750 c.c. (24 f3), respectively, of a $\frac{1}{5000}$ solution gave a remarkably successful result; but in two or three others the effect did not appear to be so good. In the discussion that followed Barrows' communication the majority seemed prepared to keep an open mind on the desirability of any extensive adoption of the method.

UNGUENTUM CREDÉ (containing 15 per cent. of colloidal silver or collargol) was introduced by Benno Credé in 1897 and has already been extensively tried. Collargol itself, which is soluble in 25 parts of water, is also adapted for intravenous injections in $\frac{1}{200}$ or even $\frac{1}{100}$ solution, in the dose of 20 to 30 mg. ($\frac{1}{2}$ to $\frac{1}{2}$ gr.); and Credé has found that the silver injected was absorbed and eliminated, and produced marked leucocytosis, etc. On the other hand, Cohn¹ has shown experimentally that it possesses strong antiseptic properties, both in watery solution and in the blood serum; but that forty-five minutes after introduction into the blood stream the collargol is fixed in the tissues and no longer exists in the blood—facts which, as Cohn points out, are rather against the probability of its being of use in general infections. Experiments with various bacilli have further confirmed this surmise.

INTRAVENOUS INJECTIONS OF CORROSIVE SUBLIMATE. The alleged bactericidal effects of these injections have been tested in animals by Serafini,² with completely negative results. His observations must be regarded as conclusive on the special point at issue, viz., as to the immediate destruction of bacilli, particularly as they agree with Fortescue-Brickdale's findings. On the other hand, good clinical results have been recorded, among others by Tommasoli. Tommasoli³ has used intravenous injections in syphilis for the last seven years. His experience is, therefore, important in view of the possibilities of this method of treatment in various cardiac and pulmonary disorders. He has treated forty-four cases of syphilis and cured thirty. Some local disadvantages, such as painful swelling, slight phlebitis and erythema, may occur, but are not usually of any lasting importance. He begins as promptly as possible and follows up the course by ordinary mercurial treatment for several months. The number of injections ranged from fifteen to thirty-two, beginning with 6 to 8 mg. ($\frac{1}{16}$ to $\frac{1}{8}$ gr.) of sublimate and increasing rapidly to 14, 16, or 18 mg. ($\frac{1}{4}$, $\frac{1}{2}$, or $\frac{3}{4}$ gr.). It is stated that the method is harmless even with a dose of 2 cg.

ACUTE RHEUMATIC POLYARTHRITIS TREATED WITH INTRAVENOUS INJECTIONS OF CORROSIVE SUBLIMATE. G. Avanzino⁴ records

¹ Centralblatt f. Bakt., November 5 and 17, 1902.

² Münchener med. Wochenschrift, April 22, 1902.

³ Journal of the American Medical Association, March 14, 1903.

⁴ Policlinico, January 31, 1903.

the fact that a young patient subject to acute rheumatic attacks after numerous mercurial injections for syphilis lost his liability to rheumatism. This is alleged as a confirmation of the views of Singer, Wasserman, and Dagnino that pyogenic micro-organisms are present and should be combated by intravenous injections of corrosive sublimate. Avanzino has followed Singer's practice in that respect, and has treated to his satisfaction sixteen cases of acute rheumatic polyarthritis without any complication, but with speedy relief to the temperature, pain, and stiffness, although not so quickly to the swelling.

Reviews of the recent developments of the intravenous methods are contributed by v. Patella,¹ of Siena, and by F. Mendel.² The latter reports very favorably upon atoxyl (metargensäureanilid), an anilin preparation of arsenic, which he finds superior to the cacodylate of sodium, and upon its joint use together with tuberculin; and also upon sublatin, a combination of mercuric sulphate with ethylenediamin, which has been used with great success in syphilis.

SOME OF THE DANGERS OF INTRAVENOUS METHODS have been brought before us by R. A. O'Brien,³ who records a case of sudden death in a woman after an injection of 10 c.c. (f3ijss) of antistreptococcus serum. Respiration failed before the heart, and in spite of all available restoratives the patient died. O'Brien quotes other cases which were followed by unpleasant symptoms, such as rigors, collapse, and respiratory embarrassment, but the patients recovered. It is well to remember that those who use this method of treatment must occasionally be ready to deal with emergencies. O'Brien, in the absence of a post-mortem examination, has not been able to satisfy himself as to the cause of death in his patient. The fact that the fluid was injected without previous warning may, perhaps, be of importance.

SEROTHERAPY. This year seems likely to herald in a more extensive use of pathological sera. It is becoming apparent that antitoxins and immunizing sera are not limited always to one action; but that, being beneficial in one direction, they can render help in other affections by the unexplained modifications which they introduce into the vital processes. We have previously heard of the results obtained in whooping-cough by antidiphtheritic serum. Other affections have since then been treated on a similar plan, and the success recorded has received the same explanation as that applied to the effects of the intravenous injection of albuminates of the metals—a catalytic action.

THE ALLEGED INCOMPATIBILITY OF TUBERCLE AND CANCER has suggested to MacCaskey⁴ the view that systematic local injections of

¹ Klin. therap. Wochenschrift, 1902, Nos. 46-48.

² Therap. Monats., April, 1903.

³ Lancet, October 11, 1902.

⁴ American Journal of the Medical Sciences, July, 1902.

tuberculin into the cancerous tissues might be tried in cases not eligible for operation. The proposal does not sound very hopeful, but the future developments of serotherapy may reserve for us many greater surprises.

The intravenous route is now being recommended for serotherapy itself. The different antitoxin sera have recently been given by intravenous injection, and reports are at hand of cases of diphtheria and of plague treated in that fashion by R. A. O'Brien.¹ D. Louis Cairns² strongly advocates intravenous injections in the more malignant forms of diphtheria, particularly in those in which treatment has been delayed until the patient is moribund and in those in which the toxæmia is profound. As these are the cases in which the administration of serum by the ordinary subcutaneous route is likely to fail, this new method deserves careful consideration. Lastly, Krasmitski³ recommends them for immunization against rabies, which has been treated in this way.

GAS INJECTIONS INTO VEINS. Some therapeutical discussions have recently taken place upon the somewhat unpromising subject of intravenous injection of gases. Gaertner,⁴ on the strength of numerous experiments on dogs, which showed that no evil effects resulted in animals, recommends intravenous injections in all forms of asphyxia. Unlike nitrogen, oxygen is quickly absorbed by the blood, and is not detected in the left ventricle.

OXYGEN. The practical conclusions derived by Gaertner should not pass unchallenged. Goodridge⁵ has satisfied himself that the method is dangerous. Goodridge's experiments show that the entrance of even small amounts of air into veins proves fatal, not owing to any primary respiratory paralysis, but to gaseous distention of the right heart or gas emboli in the coronary vessels. This agrees with the old accepted doctrine which insists upon special care in any operation on the "danger zone" in the neck. He gives practical directions both for the prevention and for the treatment of this accident. The prone position affords least risk. If the hissing sound characteristic of the entrance of air be heard, the finger should be used as a plug and the wound filled with salt solution, while the chest is compressed. Puncture and aspiration of the right ventricle may be necessary (through the left fourth space from the sternum) and a warm saline injection should be introduced into the median basilic vein to make up for the loss.

Hare, while admitting the obvious fact that very large quantities of air must prove fatal, and that danger may arise from smaller amounts,

¹ *Lancet*, October 11, 1902, p. 1015.

² *Ibid.*, December 20, 1902, p. 1085.

³ *Medical News*, August 2, 1902.

⁴ *Wiener klin. Wochenschrift*, July 10, 1903.

⁵ *American Journal of the Medical Sciences*, September, 1903.

refers to the experimental evidence obtained by Senn and by himself to the effect that small air emboli are not so much to be dreaded as Goodridge makes out, and that in animals they are practically never fatal. His observation that differences exist between various species as to susceptibility is of much importance, as it suggests a possibility that in man considerable variations may obtain not only in different individuals, but also in any one subject at different times. Goodridge,¹ in his reply to Hare, sees "every reason to believe that man is extremely susceptible." He states that "in all the dogs injected with 75 c.c. of air there were observed sudden fall of blood pressure, a churning sound, gasping respirations, and a heart's action at first tumultuous and later rapid, weak, and irregular." He still agrees with Kemp² that statements that the entrance of small quantities of air (into the veins) need not be a source of anxiety are pernicious teaching likely to lead to carelessness.

THE INTRAVENOUS ADMINISTRATION OF ADRENALIN in cases of cardiac failure has been tried with some success by Stephen G. Longworth³ as well as the internal and the subcutaneous methods. J. Takamine's adrenalin in normal saline with a trace of chloretone was the preparation used. The experiments of G. Oliver and Schäfer have demonstrated by the intravenous method that the most powerful effect is produced on the muscular system generally, but especially on the muscular walls of the heart and bloodvessels, with, in addition, a stimulating effect on the cardioinhibitory system and also some action on the voluntary muscles. As a result of this action, and in spite of the slowing of the heart, there is produced a marked rise in blood pressure which can be still further augmented if the vagus action be removed either by paralyzing with atropine or by section. Schäfer considers that suprarenal extract probably produces a greater rise in blood pressure than any other known substance. The effects although great and immediate, pass off in a few minutes or perhaps, as Schäfer suggests, because the active principle may be taken and stored by the muscles.

The doses used by Longworth were: of the five-grain tabloids, one to three, three times daily; of adrenalin chloride by the mouth up to $\frac{1}{86}$ of a grain three times daily; subcutaneously up to $\frac{1}{100}$ of a grain, with a bulky saline injection; and intravenously from $\frac{1}{1000}$ to as much as $\frac{1}{100}$ of a grain, repeated, if necessary, in cases of sudden heart failure.

In its effects the intravenous administration is the most rapid (within a few seconds) and active, but also the most transient (within a few minutes). It is, therefore, as suggested by Cushny, better adapted for

¹ American Journal of the Medical Sciences, March, 1903, p. 519.

² Enteroclysis, Hypodermoclysis, and Infusion, pp. 178, 179.

³ British Medical Journal, July 19, 1902, p. 170.

cases of chloroform poisoning than the others, absorption being partly paralyzed.

Given by the mouth adrenalin chloride is immediately absorbed and yields its effects upon blood pressure, pulse rate, and radial calibre within five minutes; but these pass off within an hour and are followed by a distinct reaction.

The tabloids and powdered extract gave slower effects, which were more sustained, probably owing to slower and more gradual absorption.

Longworth notes that suprarenal substance, although not cumulative like digitalis, resembles the latter in its action upon the heart and arterioles, and probably also contains several active principles. It has been used with advantage by G. Oliver in various conditions of anæmia and asthenia; and has been recommended in the myocardial asthenia of acute pneumonia, enteric and other febrile affections, in some forms of mental disease with lowered blood pressure, and in many other conditions. In *Addison's disease* it has usually been tried too late to be of any service. In *Graves' disease* it deserves an extended trial. Hypertrophy of the thymus in animals deprived of their suprarenals has suggested the view, not accepted by Schäfer and Oliver, of a probable antagonism between the two sets of internal secretions.

S. Floersheim¹ maintains his strong advocacy of suprarenal extract in most conditions of cardiac asthenia, whether toxic (as in chloroform administration), myocardial, or merely functional, although, as others have also pointed out, normal hearts do not show any obvious reaction to the drug. Inasmuch as pulmonary congestion, pneumonia, bronchitis, asthma, and other affections of the lung entail considerable stress upon the heart, suprarenal extract has a distinct place in pulmonary therapeutics.

The Administration of Digitalis. William H. Porter² warns us to stop the administration of digitalis at the point of maximum advantage, when the vessels are braced up and the systole increased, lest toxic effects of its prolonged use should be difficult to remedy even by nitroglycerin. We cannot agree with him that digitalis is of no service in aortic lesions, or that it should always be avoided in fatty and other myocardial degenerations.

Huchard³ has also an article on the abuse of digitalis particularly in exaggerated arterial tension and in arteriosclerosis.

Rosenthal prefers to inject subcutaneously an oily solution of digitalis ($\frac{1}{8}$ mgm. in 1 cm.). These injections have been free from all complications of pain, inflammation, or induration, such as have frequently been

¹ New York State Journal of Medicine, July, 1902.

² Medical News, May 3, 1902.

³ Journal des Prat., April 12, 1902.

noticed after ordinary injections, and their efficacy has been tested in animals.

THE VALUE OF ACONITE IN ASSOCIATION WITH DIGITALIS, a combination which in well-balanced doses is found to produce results not separately obtainable from either, is brought forward by H. A. Hare¹ with singular aptness in conjunction with excellent advice on rest and exercise. It is useless to expect good results from either of these drugs in patients with myocardial disease who persistently take severe exercise "for their health."

Some cases of valvular disease do not require digitalis, but will often be greatly benefited by aconite, which has a steadying effect on the heart through its influence on the vagi, as has digitalis. It acts by its sedative influence on the heart muscle in hypertrophy, which sometimes produces an excessive irregularity, and by its relaxing effect on the bloodvessels.

In other cases both drugs may be of use. Their combination so happily suggested by Hare is, then, analogous to that healing combination of rest with exercise which is the keystone of all restorative cardiac treatment.

Camphor as a Cardiac Stimulant. Hildebrandt² concludes from his investigation that the action of camphor is to stimulate the heart muscle without materially increasing the blood pressure.

The Balneological Treatment of Heart Disease. Little has been added to our previous resources in this important direction. G. Licata³ suggests that the opportunities for suitable treatment of heart affections might be multiplied as well as improved. Almost any watering-place is adapted for this purpose. Systematic cardiac treatment might readily be organized at all health resorts.

PEAT BATHS have been recommended by Loebel for cases of arteriosclerosis and fatty degeneration of the heart muscle combined with a high blood pressure. They are contraindicated in cases of failure of compensation with dropsy, on account of their tendency to lower blood pressure. This effect is the source of their beneficial action in the other classes of cases, which include, of course, a very large neurotic group.

Neville Wood⁴ considers that the family physician has the best opportunity of seeing patients at the time when they will be most benefited by baths. The most suitable cases are those of moderate dilatation accompanied and in great part caused by general malnutrition. The slighter cases of arteriosclerosis may also be beneficially treated in this manner.

¹ Journal of the American Medical Association, September 27, 1902.

² Arch. f. Exper. Path. und Pharm., Band xlviii., Hefte 5 and 6.

³ Riforma Medica, 1902, xviii.

⁴ British Medical Journal, February 7, 1903.

ELECTRIC BATHS. Hornung¹ insists that considerable improvement may be obtained in myocardial insufficiency from faradization or baths of the alternating current night and morning, provided the treatment be long continued, the patients remain in bed for weeks or even months, the diet be light and nutritious, with frequent small meals (including cold milk, yolk of egg, and sugar), and that alcohol be rigidly excluded. The gain felt and observed may be transient at first, but gradually becomes more durable and finally permanent.

HYDROTHERAPY is capable of much service with little apparatus by varying the mode of application and the temperature. As stated by S. Solis-Cohen,² home-hydrotherapy, for which a few feet of rubber tubing, a rubber bag, and a hose are the chief requisites, may supersede the necessity for distant travel and afford relief to many a heart. Physicians are slow to realize that a Leiter coil or the ice-pack are the best protection against cardiac failure in infective disease, and that alcohol in large doses is more dangerous in cardiac weakness even than cold applied over the precordium. Internally, opportune draughts of water may relieve a dropsy; and a subcutaneous supply, not rapidly but slowly administered, may sometimes start the needed diuresis.

GENERAL TREATMENT BY EXERCISE. It is rightly contended by I. N. Snively³ that the basis of cardiac treatment is to include individual study of the patient. Attention must be paid to the heart muscle rather than to the murmur, to rest and feeding rather than medicine. The functions of the liver and kidneys should be watched and exercise advised if desirable.

The Physical Methods of Cardiac Treatment. No material advance has been made in this department of therapeutics. "Kinesitherapy," an awkward term for "treatment by movement," is a two-edged weapon, fit for skilled use only. It might be compared with digitalis in its capacity for good and for evil. The whole subject is put before us by Krikors,⁴ with details as to the judicious employment of respiratory as well as of passive and active movements and of massage.

"*The evils of exercise as a cure, where rest is needed,*" are forcibly put before the profession by H. A. Hare,⁵ who has repeatedly seen men of advanced years, with somewhat fibrous vessels, mistake their senile heaviness for the heaviness of lack of exercise, and endeavor on the golf field, on the bicycle, or by rowing or walking, to drive away the symptoms from which they suffer with deplorable results. No comment

¹ Zeitschrift f. Krankenpflege, March, 1902.

² Fifty-second Meeting of the Pennsylvania Medical Society.

³ Medical News, New York, September 6, 1902.

⁴ Journal de Praticiens, October 18, 1902.

⁵ Journal of the American Medical Association, September 27, 1902.

need be made upon this warning, which, like many other precepts we are constantly preaching, is often most needed by the preacher.

Exercise. In von Noorden's¹ estimation, a great advance has been made in modern cardiac therapeutics in the recognition that it is a fallacy to regard absolute rest as requisite in valvular disease. A judicious amount of exercise is good, but its dose must vary. To be especially avoided are palpitations, shortness of breath, such as might result from hurry or flurry. Obesity is a special evil to which von Noorden has devoted the minute attention which it deserves. It is a golden rule to avoid abrupt variations in body weight. He does not favor permanent vegetarianism in the cardiopathies of the obese, but a mixed diet with small and frequent meals, not much diluted with fluid. The diet cannot be successfully arranged on a uniform plan for all, but must be specially arranged for each.

E. Lindemann² also dwells upon the value of "Physical Therapeutics" in heart disease.

Daily weighings in cases of heart disease are recommended by Jacobäus.³ This doubtless may provide an occupation for the patient, but the clinical value of so short an interval between observations appears to us to be more than questionable.

The Functional Affections of the Heart. ABNORMAL MOBILITY OF THE HEART, which was referred to in last year's report, continues to attract attention. Perhaps the most practical instalment is that contributed by Leusser⁴ to the physical signs of the condition. He believes that the appearance of a strip of percussion resonance along the left edge of the sternum when the patient reclines on his left side is diagnostic, provided the dulness returns with a resumption of the dorsal decubitus. Change of posture is also of value in the diagnosis of pericardial effusion.

In certain subjects a marked degree of mobility of the heart's apex, particularly toward the left, is an undeniable fact; but such expressions as "dislocations of the heart," "floating heart," "wandering heart" are inaccurate and misleading. We do not find evidence of these excursions in the dead; and who would pretend that the ventricles ever got away from the hold of the great vessels, the left auricle from that of the pulmonary root, or the right auricle from that of the vena cavæ? A general looseness of the intrathoracic attachments is conceivable, rendering the finer visceral landmarks unreliable; but it is difficult to follow the idea which Ferranini⁵ endeavors to work out as to an "autochthonous

¹ American Medicine, Philadelphia, May 4, 1902.

² Therap. Monats., August, 1902.

³ Zeitschrift f. Diätet und Physikal. Therapie, Leipzig.

⁴ Münchener med. Wochenschrift, July 1, 1902.

⁵ Revue de Médecine, May 10, 1902.

dislocation of the heart" from congenital hypoplasia or dystrophy of its own suspensory and supporting structures if this excess of motor range must be regarded as independent of any alteration in the attachment, position, and size of the surrounding viscera. The heart is typically a pendulous organ, and its dangling is essentially conditioned by the space it may be afforded by its surroundings.

These considerations are thoroughly appreciated by Ludwig Braun.¹ Those specially interested in the subject should also read Rumpfs² views, recently restated by him in reply to Braun and Romberg. Braun wishes to keep "cardioptosis" distinct from the rest, regarding it as a mere result of cardiac enlargement. So-called "wandering heart," a term which he would banish from nosology, is not in his estimation responsible for the ills which have been charged to it. It is constantly found in those who are and who feel perfectly well. Even when it happens to be present in and to add to the distress of a neurasthenic, it is not to be regarded as the cause of the latter.

NEURASTHENIA CORDIS is lightly touched upon by Hoppe,³ who describes the general symptoms of neurasthenia on the one hand, and on the other those symptoms which he specially connects with the cardiac disability. It is difficult to conceive of a strong heart in a neurasthenic individual, while excessive cardiac irritability amounting to cardiac neurosis is well known to be an individual peculiarity of some powerful subjects with excellent cardiac muscle and clearly not neurasthenic. This points to the need for a clearer distinction under this heading between the purely nervous and the neuromuscular department of so-called cardiac neurasthenia. General neurasthenia seems to me to be always based upon primary or upon an associated "cardiac neurasthenia" made up of myasthenia and of deficient nerve-energy. Many cases of neurasthenia strictly so called will probably come to be recognized as cases of cardiac neuromuscular exhaustion.

THE RELATIONS OF THE PNEUMOGASTRIC NERVE TO DISEASES OF THE HEART AND LUNGS are the subject of a learned contribution by Josef Esser,⁴ founded upon the results of chronic nicotine intoxication.

THE NERVOUS SYSTEM AND THE HEART. David Ferrier's Harveian oration,⁵ "The Latest Review of Our Present Knowledge Concerning Cardiac Innervation and of the Essentially Clinical Subject of the Influences Exchanged between Heart and Nervous System," deserves very special notice. According to Gaskell's view of cardiac contraction as being automatic, of the ganglia as not being centres of motor energy,

¹ Centralblatt f. inn. Med., August 30, 1902.

² PROGRESSIVE MEDICINE, September, 1902.

³ Loc. cit.

⁴ Arch. f. exper. Path. und Pharm., Band xlix., Hefte 2 und 3.

⁵ Lancet, October 25, 1902.

but as belonging to efferent visceral vagus fibres, and of the visceral or splanchnic nerves distributed to the heart and to other hollow viscera as consisting of a motor set and of an inhibitory set of fibres, the motor functions of acceleration and augmentation belong to fibres of the ganglion stellatum (von Bezold, 1866) really derived from the upper thoracic anterior roots, while the reverse actions are obtained from the vagus. Relatively insensitive (Harvey) to tactile stimuli, the normal heart resents strong stimuli, and particularly abnormal tension, more markedly (Budge) at the base than at the apex, through sensory fibres running not only in the vagus, but together with motor fibres in the upper rami communicantes, the chief being the depressor nerve, which is in reality (Köster) a sensory nerve of the aorta, not of the heart. Through all these the continuously automatic action of the inhibitory vagus centre and of the medullary centres of acceleration and augmentation suffer influences from the psychical, somatic, and splanchnic spheres.

Some voluntary control (apart from Weber's "forced expiratory arrest," etc.) has been exceptionally exhibited in the shape of willed accelerations by subjects gifted with unusual muscular power.

The Vasomotor Nerves and Centres. Vessel-tone or semicontraction has its centre (Gaskell) in the anterolateral nucleus of the pons medulla, with subsidiary spinal centres (active after section of the medulla). Some rhythmic automatism is perceptible in their response to internal pressure stimuli (Bayliss). Vasodilator nerves (Schiff, Bernard, Eckhard) are associated with the vasoconstrictors in greatly varied proportions.

In the lungs Bradford and Doan and François Franck had claimed to have demonstrated vasomotor nerves; but Brodie and Dixon, by perfusion with suprarenal extract, seem to have proved their absence. The vasodilating centres have not been localized definitely, but are probably related to the spinal cord segments from which the nerves arise.

Ludwig and Cyon's depressor nerve (1866), or afferent nerve of the aorta (Köster), illustrates the indirect form of vasodilatation (*e.g.*, as seen in the abdominal vessels) by inhibition. Similarly, reflex inhibition of the heart with vasodilatation may be excited by irritation of the air-passages (Dogiel, Holmgren) and of the lungs; but the rule is vasoconstriction and cardiac acceleration from any stimulation of sensory nerves.

In shock the inhibitory mechanism of splanchnic vasoparalysis and reflex cardiac arrest (Goltz) is excited by the suddenness and severity of the stimulus. In early chloroform anæsthesia it is rendered more excitable, but in the deeper stages the cardiac reflexes are almost abolished. Ferrier and Brodie have demonstrated in animals deprived of their cerebrum that most cardiac and vascular reflexes are capable of being elicited through the medullary centres alone.

The Cerebral Circulation. The existence of any vasomotor nerves in the brain is still a question. Ferrier and Brodie have found strong experimental evidence in favor of their existence. By removing the brain, injecting the basilar artery with adrenalin, and measuring the outflow from the sinuses, Brodie found that a little adrenalin diminished the outflow; much adrenalin almost stopped it. Nerve plexuses have been demonstrated on vessels by Gulland and by Morison, but no effects follow the stimulation of the cervical sympathetic, of the ganglion stellatum, or even of the vasomotor centre, although the opposite statement has been made (Nothnagel, Cavazzani, etc.). Mosso's plethysmographic results seemed to indicate the existence of some intrinsic mechanism for the regulation of the local blood supply. Roy and Sherrington had sought to explain it in connection with variations in the contents of the periarteriolar lymph spaces, but this has not been confirmed.

Although cerebral activity ceases with the cessation of the circulation, it is compatible, according to Leonard Hill's recent observations, with considerable oscillations above and below the average of intracranial pressure (taken at about 100 mm. of water), viz., between extremes such as zero or 50 mm. Hg. Ferrier believes that the amount of the cerebrospinal fluid is very small and that the variations in blood supply affect mainly the relative proportion between arterial and venous blood.

The Influence of Cerebral Activity on the Heart and Bloodvessels. The physical accompaniments of strong psychical emotions have always been expressed in terms of the heart. This does not, however, prove the correctness of the view taken by James and by Lange that vasomotor reaction and the resulting states of the viscera are the essential basis of the "coarser emotions" themselves, such as fear, anger, sorrow, and joy; and while recognizing the immense rôle of the visceral factor in emotion, we cannot regard this as secondary only to vasomotor changes. Pawlow's luminous experiments on secretions prove that psychical states may influence secretions not mediately through the circulation, but directly through the secretory nerves of the glands.

Turning now to the study of the complex mechanisms in which the circulation does play a part, we must place in the first line Binet and Courtier's principle that every and any feeling and the passage from repose into activity cause vasoconstriction more or less proportionate to the stimulus, and perhaps for that reason greater for painful feelings and emotions than for pleasurable ones. There is heart acceleration, obliteration of the respiratory pause with quicker and deeper breath, and a general rise of blood pressure. Ferrier, with the plethysmograph, has confirmed Mosso's observations that there is almost constantly an increase in the size of the brain; but the oscillations of volume of the brain do not always

preserve a strict relation of antagonism to those of the volume of the extremities, probably owing to the local variations in the cerebral vessels themselves. Wundt recognizes other classes of feeling (exciting or soothing, straining or relaxing) besides pleasure and pain, and Braham believes in a specific influence on the circulation for each of them.

As regards pleasure and pain, the former is associated with vascular dilatation and exaltation of dynamic and metabolic activity; the latter with the reverse. Agencies bringing about the corresponding corporeal states induce (Lange) psychical feelings of comfort or of pain. Thus conditions of exalted or depressed vital energy (and, therefore, resistance) go hand-in-hand with pleasurable and painful emotions, and this explains the use of stimulants and of nervines, including wine.

In general the "circulation" effects of emotion and of sensations of pain and pleasure are probably similar or identical, and correspond to a harmonious relation (or the reverse) between the processes of integration and disintegration. The emotional and the sensory substrata are one and the same; but emotions are much more complex than feelings, and if we suppose that each organ has its own affective tone, its own centre, and its own share in the general emotional result, the visceral range of emotional irradiation may be more varied as well as extensive than can easily be induced reflexly by peripheral stimulation. Fear will not only induce perspiration, horripilation, interference with the motor and the glandular system of the alimentary canal, but it may arrest the heart-beat, check cerebral function, or paralyze the protective mechanisms of the organism.

The attempt to demonstrate the existence and the situation of cortical centres for the cardiac and vasomotor reactions in question has not hitherto been successful, although Schiff, Bochefontaine, Danilewsky, and others have described variations in heart rate and in vascular tone from cortical irritation chiefly in the motor region. François Franck's experiments tend to show that these are correlated, quasi-epileptic concomitants of the functional result of motor-centre irritation; and that, moreover, no definite areas can be demonstrated to possess separate and steady control over acceleration and inhibition, vasoconstriction and vasodilatation.

More probably the cardiac and vascular reactions from cortical irritation may be worked indirectly through the respiratory centre, which is largely governed from the cerebrum. The cardiac and vascular centres are in the medulla, and to them the hemispheres are as much peripheral as are the sensory nerves in general. The same may, perhaps, apply to the so-called centres of the salivary and digestive glands recently described by Bechterew and others.

As regards the centrifugal channels for cerebral influence upon the

cardiac and vasomotor centres, electric stimulation of the *tegmentum* beneath the *corpora quadrigemina* has been observed by Danilewsky, Lauder Brunton, Ferrier, and others to invariably produce effects suggesting the presence of connecting fibres. The paths may be identified, but Ferrier concludes that it will probably remain impossible to reproduce by any artificial stimulation the conditions underlying any particular emotion.

THE NERVOUS AFFECTIONS OF THE HEART. G. A. Gibson,¹ in his Morison Lectures on this subject, and Herman H. Hoppe,² in his paper on "Neuroses of the Heart," deal on parallel lines with a subject much too vast for a complete survey. We must limit ourselves here to the considerations of bradycardia and of tachycardia.

Bradycardia, or slow heart, may be physiological, as in the instance of the great Napoleon, or due to organic affections of the heart and bloodvessels, or of the brain and medulla; but it is only the reflex form which is under consideration. Hoppe regards it as rare and as chiefly due to gastrointestinal causes disturbing the splanchnic circulation and throwing increased pressure upon the heart.

The attacks, which are paroxysmal, with sudden onset and termination, alternate with palpitations. They may be associated with rigor, vomiting, collapse, and sometimes epileptiform convulsions. The prognosis is not unfavorable. The treatment is identical with that of neurasthenia; sedatives such as bromides, asafoetida, or valerian are useful.

Paroxysmal bradycardia, or *Adams-Stokes' disease*, or, rather, syndrome, due, according to Gibson, to sclerosis of the arteries at the base of the brain, consists in seizures characterized by great retardations of the rate of pulsation, with epileptiform attacks. It is not the result (Tripier) of an epileptiform seizure, but *vice versa*. The cause is not coronary atheroma (Krehl), but cerebral atheroma (Huchard), which by limiting the cerebral circulation leads (under any special stress) to irritable weakness of the inhibitory mechanisms.

It is best treated by rest, by attention to the digestive processes, the iodides and hydriodic acid to restore the health of the bloodvessels, nitroglycerin for any tendency to vascular spasm, and belladonna or the bromides to act as a sedative to the vagal system.

When bradycardia is due to increased inhibition belladonna, bromide, or hydrobromic acid are indicated; when due to poisons, these should be eliminated. In the case of tobacco Gibson finds that six months generally elapse after its cessation before its influence begins to disappear and six months in addition before it has entirely disappeared.

¹ Edinburgh Medical Journal, April, 1903.

² Journal of the American Medical Association, May 24, 1902.

B. Lewy's¹ exhaustive clinical account of a case of Adams-Stokes' disease in a man, aged seventy-three years, unfortunately not necropsied, adds another symptom—that of *profuse sweatings* during the attacks—to those hitherto described or, at any rate, insisted upon as part of the well-known set of symptoms, viz., bradycardia, unconsciousness, convulsions, and Cheyne-Stokes breathing, to mention only those which are most prominent.

Tachycardia. Undue quickening of the heart's rhythm due to various causes, including central nervous affections and pressure upon the vagus, is entitled to be termed tachycardia; but this expression is more properly restricted to the symptom-group defined by Nothnagel, Bouveret, Martius, and others as “essential,” and regarded as a distinct affection occurring periodically in individuals otherwise well.

Herman H. Hoppe² looks upon tachycardia as a symptom of various affections and not as a disease. With this opinion the present writer entirely agrees, and his observations would lead him to suspect gastric disturbances as the most common determining cause in subjects predisposed to cardiac irritability. The heart hurry sets in and disappears suddenly, with feeling of fear or anxiety, but usually little pain. The pulse, which is rapid, may run up to 300, but remain above 160. There is no murmur, and, according to Krehl, dilatation is not a constant feature, although Martius thinks it is always present and is the cause of the condition. Romberg and Krehl admit a derangement of the cardiac nervous system or of the coronary system, but this is not a complete explanation.

Hoppe is satisfied that tachycardia is always merely a symptom of some other affection, and he gives instances in point.

Oppenheim regards tachycardia as the most prominent among the set of symptoms which he describes as due to irritation of the sympathetic nerves of the heart. Among them he includes dilatation of one pupil, wide separation of the eyeballs, pallor and coldness of the face, etc.

Paroxysmal tachycardia, in Gibson's opinion, may be probably produced almost entirely by loss of vagus influence. Tracings demonstrate that the increased frequency depends upon the presence of premature systoles accompanied by cardiac enlargement and weakness. Its treatment is practically the same as that of tachycardia in general, with attention to posture, the use of bandaging, and the adoption of respiratory exercises. He explains the relief from cardiac pain sometimes afforded by the latter on the hypothesis that the right heart may thereby be unloaded and perhaps some lateral pressure removed from the surface of the aorta. I have often thought that a great part of the benefit is traceable to the additional room afforded, in cases of inflated abdominal

¹ Zeitschrift f. klin. Med., Band xlvii., Hefte 3 und 4.

² Loc. cit.

viscera, by the lowering of the diaphragm induced by systematic respirations. On this subject a great deal might be said, as the principle involved is the basis of valuable methods of treatment.

Seymour G. Sharkey's¹ case is an interesting illustration of the suddenness of relief. A farmer, seeking his advice for severe symptoms and anasarca, lost his tachycardia in his consulting room.

Tachycardia in Acute Rheumatism. A case is recorded by Everington² in which the heart-beats reached 220 per minute, although no organic disease could be detected. The rate was very materially reduced in this instance by the patient taking several deep breaths—a method of reduction which has been previously observed to be efficacious in similar instances (Rosenfeld, Broadbent, Allbutt, and others). In an unpublished case of my own the periods of tachycardia had on several occasions terminated during attacks of vomiting.

CARDIAC ARHYTHMIA. Lommel³ recognizes three chief varieties of *pulsus bigeminus*. The extra systole which occurs in the increased blood pressure is described as the dynamic pulsus bigeminus; but the double beat may occur as a result of organic heart disease, these cases forming the cardiac group; or, lastly, it may result from nervous affections and intoxications. The significance of the dynamic pulsus bigeminus is not necessarily unfavorable unless the pressure be excessive. A low pressure rather suggests a structural cardiac affection and is more rarely of toxic or nervous origin. He even attempts to localize the cause of the extra systole, which he places in the ventricle when there is high pressure and in the base when the myocardium is affected. Other points of interest in the exposition of this difficult subject will repay perusal in the original, particularly as regards the mutual relation of pulse and respiration. The normal acceleration of the pulse during inspiration is apt to be greatly increased in some conditions of debility and under nervous influence, but does not of necessity imply organic disease.

Gibson⁴ reminds us in his Morison Lectures that it has been shown by Mackenzie, Wenckebach, and Cushny that the cardiac rhythm can be artificially disturbed by stimulating the sinus. If the stimulus be applied to the auricle before its time for contraction the "early imperfect systole" of Mackenzie is the result, and the pulse is recorded in the carotid. Cushny has shown that when the ventricle itself is stimulated just before its time no effect is produced upon the auricle, but the ventricle contracts feebly and no carotid pulse occurs.

According to Gibson, the treatment of arrhythmia should in every case begin with the removal of the cause. When there is only asthenia,

¹ Lancet, December 6, 1902, p. 1523.

² Deutsche Arch. f. klin. Med., 1902.

³ Ibid., May 10, 1902.

⁴ Edinburgh Medical Journal, April, 1903.

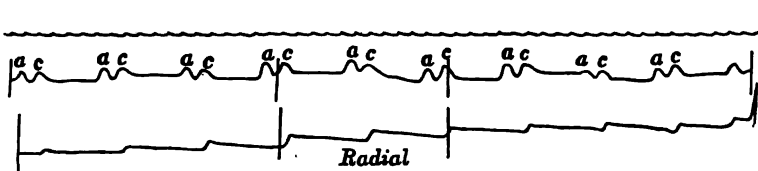
cardiac tonics will steady the rhythm, as in the irregularity of middle life. In youth the causation is variable and often includes a psychical element. In a large group there is irritable weakness in the vagus department and visceral disorders elsewhere, and bromides alone, or the valuable combinations of strychnine and hydrobromic acid, are found most useful.

THE CAUSE OF HEART IRREGULARITY IN INFLUENZA. The veil has been partly lifted by the masterly and purely clinical investigations of James Mackenzie,¹ of Burnley, whose recent work on the pulse is one of the most important contributions to medical literature during the past year. Strong evidence is adduced in support of the view that in the case which he reports the heart symptoms were due, not to vagus stimulation, which would have merely slowed the heart without altering its rhythm, but to some poison acting directly upon the heart—like digitalis—and causing discordance between the action of the auricles and of the ventricles.

Can cardiac hemisystole occur?—i. e., can one side of the heart act independently of the other? This is another question which James Mackenzie is enabled to answer with the help of the record of the clinical polygraph (a tambour taking simultaneous tracings) from the jugular pulse and the radial pulse. As in development both auricles form at first one tube, and both ventricles likewise one tube, the probability is in favor of a synchronous action of both auricles, and likewise of both ventricles, and against the non-synchronous action of the two auricles or ventricles; and the tracings prove the fact. Mackenzie finds that the auricles, even when there is irregularity, always act together; and he believes that the ventricles likewise always act together, but that there may be a discordance between the times of the auricular and of the ventricular systole.

The way in which the proof can be obtained deserves to be explained, as it shows that in Mackenzie's hands the use of the polygraph renders possible the study of the movements of the four chambers of the heart. The four tracings contain the demonstration in question :

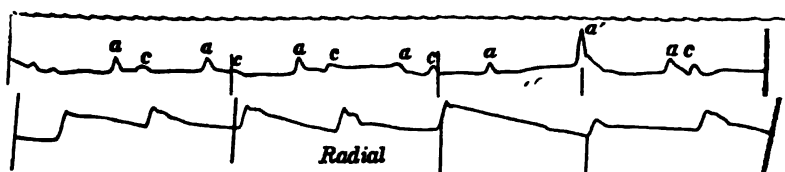
FIG. 5.



Tracing shows the normal conditions.

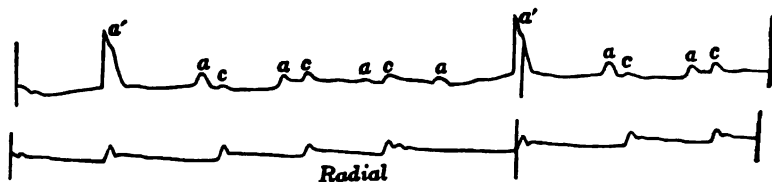
¹ British Medical Journal, November 1, 1902.

FIG. 6.



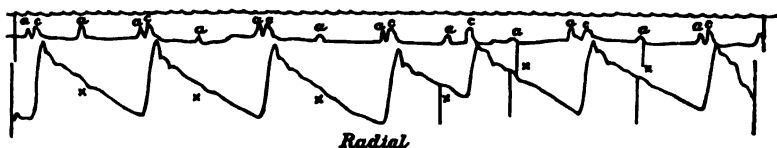
Tracing, from a patient with influenza, shows irregularities in the relative time of the auricular pulse (a) and the carotid pulse (c) and one auricular pulsation (a') of disproportionate size.

FIG. 7.



Tracing confirms the observation that the large waves (a') are synchronous with the carotid beat, and must be due to an auricular contraction coinciding with that of the ventricle when the tricuspid orifice is closed.

FIG. 8.



Tracing shows the identity in the contraction time of the left auricle with that of the right auricle.

Mackenzie has, therefore, succeeded in obtaining graphic evidence of the act of contraction of each of the four cavities of the heart, and has established the fact that even in a case of irregularity the two auricles contract simultaneously, and likewise the two ventricles.

Angina Pectoris. PSEUDOGASTRIC ANGINA. The epigastric pain described by Kaufmann and Pauli¹ in some of their cases identifies them as instances of an affection long ago described by H. Huchard as an epigastric form of angina. Although these authors regard them as instances of stenocardial pseudogastric attacks rather than true angina, still they admit that arteriosclerosis with myocarditis, endocarditis, endarteritis, or cardiac hypertrophy had some share in their production.

It is characteristic of these pseudogastric pains that they show no relation to eating, but are brought about by physical exertion and some-

¹ Wiener klin. Wochenschrift, October 30, 1902.

times by posture. Another distinctive fact is that they are remediable by remedies for lowering blood pressure.

As to the nature of angina, Breuer inclines strongly to the view that it is a cramp of the heart. He mentions three cases in which there was marked tendency to abdominal cramp in addition to the heart trouble. Breuer entertains the view that in arteriosclerosis the peripheral arteries, and particularly the small vessels with well-developed muscular coats which are distributed under the skin, are probably liable to painful cramps, and that ischæmia may arise in consequence. The same condition when it affects the muscles of the heart induces the symptoms of angina. Theobromine and other remedies of the same class have been found beneficial.¹

Kaufmann² also believes in a painful cramp or "colic" of arteries—*sit venia verbo*—using the simile of the spasm of the bile duct or of the ureter above the point of obstruction. The arteriosclerotic lesions are in this case the points of irritation under the influence of distending pressure or vasodilatation. The pain is aggravated by digitalis, soothed though not cured, by morphine; but diuretin is a special remedy for this condition, as it seems to inhibit the spastic contraction in the same way as atropine relieves intestinal spasm.

HYSTERICAL ANGINA PECTORIS is the title of a communication by Merklen³ based upon two clinical cases. Pseudoangina is often enough witnessed in association with chronic arterial and aortic changes, but is most easily diagnosed when occurring before the age for arteriosclerosis. It is not clear why Merklen should apply the term hysterical to attacks which are brought about by excitement, or overwork, or by the menopause. The attacks are frequently nocturnal and may be preceded by neuralgic vasomotor or cardiac aura. Merklen recommends various treatments according as the tendency is to neurasthenia, to anæmia, or to gout. The attack itself is to be treated with antipyrin, bromide, valerian, amyl nitrite, etc.; morphine is not to be often prescribed. The author recognizes that in some of the patients the hysterical attacks may be deceptive, and that aortitis or endocarditis may be present—a fact more important to bear in mind than the neurosis.

CORONARY ARTERY OBSTRUCTIONS are divided by Cowan⁴ in two sets: those occurring in the main trunk and those occurring in the periphery. The first may lead to sudden death, more commonly by necrosis or fibroid changes. At the periphery the obstruction may be in the district affected either complete or only partial. The former may

¹ Münchener med. Wochenschrift, October 7, 1902.

² Ibid., October 7, 1902, Band xv., No. 44.

³ Journal des Praticiens, March 29, 1902.

⁴ Glasgow Medical Journal, April, 1902.

lead to infarct and to subsequent failure or rupture of the heart, or a fibroid scar may eventually form. Partial peripheral obstruction may lead to varying degrees of granular or fatty degeneration and eventually to some fibrosis. Cowan points out that in obstruction to a small artery the compensating changes which are possible in the case of a larger artery cannot be expected. This opens up the anatomical question as to the normal degree of coronary arterial anastomosis. Cowan alludes to this and to other important points, including the fact that myocardial degeneration has various other causes besides coronary obstruction.

CARDIAC PAIN: ITS NATURE, CAUSES, AND TREATMENT. Alexander Morison's¹ views will be better understood in connection with his tabulation of the anginae, which is a useful piece of clinical analysis :

Cardiac anguish (angina pectoris).	I. With pain (Heberden's disease).	1. Musculospasmodic.
		2. Coronary. { Aneurismal. Occlusive.
		3. Aortic. { Aortitic. Aneurismal.
		4. Neuritic. { Intravascular. Extravascular.
		5. Neuralgic. { Intrinsic. Extrinsic.
		6. Endocardial (valvular). { Severe. Aortocoronary. Mild. Ventricular.
		7. Vasomotor (peripher).
		8. Compound.
	II. Without pain (angina sine dolore).	1. Fear with syncopal signs.
		2. Fear without syncopal signs.
		3. Syncopal bradycardia.

Morison's own contribution to the various suggestions in explanation of anginal pain (fatty degeneration, coronary atheroma with thickening of the membrane of Henle, calcification, or "intermittent occlusion" of Allan Burns) relates to the small coronary aneurisms which he has discovered by examining specimens after decalcification by immersion into dilute hydrochloric acid for fourteen days. This may be a possible explanation in some instances, for in aneurism of the aorta itself there is not pain in every case. He does not share Allbutt's views that the pain is not in the heart but in the aorta, nor that angina pectoris owes its origin to extracardiac causes.

I. MUSCULOSPASMODIC ANGINA. Heberden viewed the nature of the attack as a distention rather than an inflammation. Cramp is an admitted cause for muscle pain. Osler considers this view as justifiable as that ascribing the pains of parturition and various colics to ill-regulated

¹ *Lancet*, November 1, 1902.

contractions of muscular viscera, and Morison's observations incline him to the same theory.

ANEURISMAL CORONARY ANGINA. An instructive case is related by the writer in which anginal symptoms occurred in a rare instance of fully developed intramuscular aneurism freely communicating with the lumen of the coronary artery.

The chronic changes in the aorta itself are well known and are regarded as conditioned by intravascular overpressure. "To exist is to wear, and to wear is to tear."

ACUTE AORTITIS (Huchard and others) cannot be admitted as a prevalent cause for anginal pain to the exclusion of other causes, such as muscular spasm, aneurismal pressure, local neuritis, as well as other states.

AORTIC ANEURISMAL ANGINA. Sir William Gairdner's observation that small intrapericardial aneurisms are more productive of pain than the larger aneurisms is important to note, but Morison traces the pain rather to neuritic and lacerative processes in the aneurisms themselves than to pressure on the heart.

THE NERVOUS THEORIES OF ANGINA. Much has been written, but few facts reliably observed, as to the share to be attributed to morbid changes in the cardiac nervous system. Morison gives illustrations of thickened and degenerated nerve fibres lying exposed in the diseased tissues of the wall of an aneurism, and submits as a possible factor some analogous direct irritation within the heart.

Structural lesions of the nervous system at a distance from the heart have rarely been alleged—*e. g.*, an ascending neuritis of the vagus spreading to the bulb (Huchard and Cuffier) and possibly explaining the occasional cardiac crises of tabes in inflammatory changes in the ganglion of the posterior root.

Thus Morison is led to admit a *neuritic angina* which may be intravascular or extravascular. He claims, however, that we should also recognize among those anginae usually called "spurious" the functional or neuralgic nerve pain, and that this *neuralgic angina* may be either intrinsic or extrinsic to the heart.

ENDOCARDIAL (VALVULAR) ANGINA has an "aortocoronary" and a more severe "ventricular" variety. Here, again, the question is still, "Why, if extreme dilatation is the cause, does angina not occur more often?" (Osler.) But Morison insists that the state of the blood pressure at the periphery, even in aortocoronary angina, "is often one of depletion from cardiac inhibition rather than of repletion from peripheral vasospasm," and that the pulse is not always narrowed. It is clear that in his estimation some additional factor is needed beyond mere cardiac distention even when this is present.

IN VASOMOTOR ANGINA it is possible to view the peripheral vasospasm as itself the reflex result of pain rather than as the cause of the angina. Morison strongly suspects that many of these cases are not of "peripheral" origin, but really central in their production, with peripheral vasomotor manifestations analogous to those witnessed in other forms of visceral distress.

"COMPOUND ANGINA PECTORIS," the joint product of the three pathological factors—the muscle cells, the blood, and the nerves—in which one or the other may predominate, is a prudently inclusive title which can justify in turn the neuritic, the coronary, and the myocardial theory, but at the same time suggests the unwisdom of theorizing.

II. ANGINA SINE DOLORE. Under this heading, the type of which is purely syncopal instead of inhibitory, and is free from the *tertium quid* of pain, Morison includes (1) a first group, presenting pulse failure and *meditatio mortis*; (2) a second, presenting no evidence of syncope, but *meditatio mortis*; and (3) a third group (Adams-Stokes), in which there is acute syncopal bradycardia.

The cause of angina, according to Morison, would be not so much the rise of blood pressure *per se*, but "its influence upon local anatomical lesions or strained physiological structures in the heart or its immediate neighborhood."

DIAGNOSIS. Strongly distinctive of anginal from other visceral pains are (1) the primarily retrosternal site and the irradiations of the pain; (2) the early onset of the general collapse; and (3) the freedom of the respiratory function after its momentary arrest by the breast pang.

Morison deprecates, in agreement with G. A. Gibson and others, the faulty distinction between true and false. More reliable is the nomenclature based upon the degree of danger to life. *Meditatio mortis* is often present even in the non-lethal forms, but it has then instead of the feature of helpless resignation that of agitation and struggle.

By the X-rays we are now capable of identifying calcification of the ascending aorta (F. H. Williams) and of the coronary arteries in their ventricular course; and the detection of aneurism and of dilating aortitis by the same means is already almost a routine; but there is no direct identification of "endocardial angina and valvular disease."

PROGNOSIS. The only really hopeful cases are the neuralgic, the so-called vasomotor, and the toxic anginae. The fatal tendency of coronary angina, whether obstructive, neuritic, or aneurismal, needs no comment. In the severe degenerative form of musculospasmodic angina Morison remarks that there is more hope for the degenerated heart of the fat man than of the thin. Angina sine dolore, being musculoparetic, is of the gravest order. The angina of valvular disease is an expression of

loss of compensation, and prognosis varies with the chances of its re-establishment.

TREATMENT. Morison's treatment does not diverge much from the accepted lines. *Prevention* should be our first care in the aged or the prematurely old, as regards diet, exertion, and exposure to weather. In true angina the Nauheim baths, which some recommend in arteriosclerosis, are not generally advisable, and much less advisable the resistance movements. Complete rest is ultimately the only rational treatment, but this does not apply to the early stages.

During the paroxysm blood pressure is best reduced by amyl nitrite and nitroglycerin. In combination with them Laborde's tongue traction may prove useful in bad cases, as it did in some cases of *status epilepticus*. J. Leech has given large doses of liq. trinitrini (up to 20 minims) to control the more severe attacks; but Morison prefers, with Balfour, to deal with this as with other visceral pain and to give morphine (with atropine) in addition to chloroform or the nitrites. During the intervals erythrol tetranitrate, which is more persistent in its action than the nitrites, is given with aromatic spirits of ammonia and nitrous ether; but our chief resources are iodide of potassium in a sufficient dose, and calomel or blue pill.

Tobacco should, as a rule, be avoided, because it raises blood pressure.

In "*angina sine dolore*" or "*syncope trepidosa*" the guarded use of strychnine injections and of strophanthus may be adopted as a substitute for opium (or chloroform) and atropine, which are better suited for painful angina.

Traumatic Lesions of the Heart and Sudden Death. A NEEDLE IN THE HEART WALL. Cases of this kind are too rare to afford continuous opportunities for study. It is the more important that in each case recorded the position of the foreign body should be carefully localized. The insensitiveness of the heart is not universal, but there are spots of special excitability (Kronecker), a knowledge of which is of the first importance to the physician. In M. B. Fischer's¹ case, that of a boy, aged thirteen years, the needle, 3 c.m. (1.5 inches) in length, had probably been swallowed and had lodged in the posterior wall of the right ventricle. The pericardium was to a great extent adherent. The patient died of chronic hip disease; but Fischer thinks that the pulse frequency and heart weakness were cardiac symptoms directly referable to the local irritation.

RUPTURE OF THE HEART is an interesting subject but not very profitable to study, since we can neither predict it nor cure it. Stebbinghaus²

¹ Deutsche med. Wochenschrift, August 28, 1902.

² Deutsche Zeit. f. Chirurgie, lxi., 1, 2.

shows the danger of injuries to the left side of the chest in this respect and records a case in which the rupture did not become fatal until the ninth day after the injury, which proved to be chiefly to the left ventricle. R. Denman¹ records an unusual instance of *rupture of the right auricle*, the result apparently of an aneurism.

SUDDEN DEATH. Among the reflexes which may possibly bring about arrest of respiration or of cardiac action, Good² calls attention to operative interference with the trigeminus. He believes that forcible distention of the lungs by inflation would be the best means of restoring to activity the inhibited function.

An interesting collection of cases of sudden death from unusual causes is furnished by N. Stoenesco.³ The list might be supplemented by the tragic instances of unexpected death of children recovering from diphtheria.

Sudden death in infants is not due, according to P. Krautwig,⁴ to any mechanical pressure from an enlarged thymus. He believes that the gland is in some way related to bone growth and may be implicated in rachitis. It is, he thinks, the spasm of the glottis incidental to rickets which should be held responsible for the fatalities in question.

Sudden Death in Cases of Enlarged Thymus. This mode of death, to which Grawitz first called attention, is attributed by some to direct pressure of the enlarged gland upon the trachea, owing to the head being thrown too far back or the neck awkwardly placed. It is difficult to imagine that mere posture could effect so sudden a change in infants who previously had given no signs of any deep-seated pressure. It is, however, conceivable that a partial pressure may be set up in the laryngeal region of the neck, and that any accidentally superadded lateral pressure may then be adequate to cause death by interference with the glottis. Brouardel has put on record cases which support this view.

But there is another, perhaps simpler, explanation. In cases of this kind when the chest is opened the thymus occupies the entire upper retrosternal region of the mediastinum and a considerable portion of the anteroposterior diameter of that part of the thorax. The heart is largely covered by it, and between the thickened thymus above and the diaphragm below there is no room to spare. Should a sudden gastric distention supervene, and the diaphragm be lifted, the heart may be exposed to a degree of pressure which in those predisposed and temporarily weakened by some depressing ailment may suffice to determine its arrest. This view is borne out by the success obtained in Siegel's case

¹ British Medical Journal, 1903, p. 490.

³ Annales d'Hygiene Publique, xlviii.

² American Medicine, August 23, 1902.

⁴ Arch. f. Kinderheilk., xxxv. 3, 4.

(quoted by Grawitz) by the mechanical relief of pressure. A child had suffered from dyspnoea for several weeks; this was temporarily relieved by tracheotomy and by the introduction of a long tube; but it was finally completely cured by pulling up the thymus through an opening in the mediastinum and by suturing it to the sternal fascia.

STATUS LYMPHATICUS WITH ENLARGED THYMUS IN RELATION TO ANÆSTHETICS. Death from an anæsthetic is sometimes attributed to the size of the thymus, which in rare cases may be considerable in the adult.

Joseph A. Blake¹ has collected seven fatal cases in which the thymus was enlarged. He thinks that the presence of the status lymphaticus adds much to the dangers of anæsthesia; but, unfortunately, the condition seems to be practically impossible to diagnose with any certainty during life. Chloroform appears to be the most dangerous anæsthetic under these conditions.

L. Laqueur² records an unexpected death from chloroform in a boy, aged fourteen years. The autopsy showed persistence and hyperplasia of the thymus, enlarged glands at the root of the tongue, and an enlarged spleen. Laqueur is of the opinion that enlargement of the thymus increases the dangers of anæsthesia. He considers that this peculiarity may be inferred from the concurrent enlargement of the tonsils, of the posterior pharyngeal glands, and of those situated at the root of the tongue; and that in such cases it is the safest plan to assume that there may be some enlargement of the thymus.

MASSAGE OR RHYTHMIC COMPRESSION OF THE EXPOSED HEART AS A MEANS OF RESUSCITATION is regarded by Maurice Boureau³ as useless since it has proved unavailing in twelve cases in which it was tried. He therefore recommends the adoption of Silvester's artificial respiration and of Laborde's rhythmic traction of the tongue for at least ten minutes as a more hopeful procedure, and cardiac massage as a last resort. Boureau's account of Schiff's original experiments in 1874, confirmed independently by Prus in 1899, and turned to account for the first time in the human subject in 1900,⁴ will be read with interest. Tuffier,⁵ in 1893, succeeded in restoring temporarily the action of the heart by direct pressure of the finger upon the pericardium covering the ventricular region, through an incision in the third intercostal space. But previously Maclaure⁶ had published a method for reaching the

¹ *Annals of Surgery*, Philadelphia, June, 1902.

² *Deutsche med. Wochenschrift*, February 13, 1902.

³ *Revue de Chirurgie*, October, 1902.

⁴ *Hospitaltidende*, p. 1217; *Lancet*, April 13, 1901.

⁵ *Bull. et Mém. de la Soc. de Chirurgie*, p. 937.

⁶ *Gazette des Hôpitaux*, 1901, No. 145.

heart through a diaphragmatic incision, which avoids the complication of pneumothorax, and Porrier carried out this procedure in 1902. A simpler method is that which has recently been successfully practised during laparotomy on a patient of Dr. E. A. Starling and of W. Arbuthnot Lane.¹ Instead of incising the central tendon, Lane seized and squeezed the heart through the diaphragm, while artificial respiration and tongue traction were kept up. After a squeeze or two the motionless heart started beating again, and the patient recovered.

¹ *Lancet*, November 29, 1902, p. 1476.

DERMATOLOGY AND SYPHILIS.

By WILLIAM S. GOTTHEIL, M.D.

DERMATOLOGY.

The Treatment of Acne. Several important papers on this subject have been published during the past year. Leredde¹ very properly calls attention to the importance of differentiating the superficial from the deeper forms of the affection and regulating the treatment accordingly. For the former soothing lotions are most suitable. Delicate skins affected with acne must be handled gently—washing with lukewarm water and a bland soap twice daily, followed by the application of a mild paste :

R.—Zinci oxidi,
Amyli,
Ol. lini,
Aq. calcis, aa p. e.

being most suitable. Thicker integuments with deeper seated and pustular lesions require vigorous frictions with green soap tincture, possibly with the addition of bichloride in the proportion of 1 : 3000 or 1 : 2000, or exfoliation, as described last year.² If, as is often the case, a seborrhœal element is present, sulphur applications, followed by the green soap frictions and the paste, are indicated. A good formula in these cases is :

R.—Acid. salicylic.	.	.	.	.	.	.	.	.	3 parts.
Sulphur. præcipit.	.	.	.	.	.	.	.	.	12 "
Ol. amygdal. dulc.	.	.	.	.	.	.	.	.	15 "

Campbell³ reports on fifteen cases of acne treated by means of radiotherapy alone, and with uniformly good results, due, he believes, to the checking of the pus formation and the atrophy of the follicles caused by the rays. He used a tube of medium softness, with a weak light. As a routine treatment for this common and often trivial affection radiotherapy is, however, quite open to criticism. Apart from the elaborate and expensive apparatus required, there is the probability of

¹ Gazette des Hôpitaux ; Medical Review of Reviews, August 25, 1902.

² PROGRESSIVE MEDICINE, September, 1902, p. 140.

³ Journal of the American Medical Association, August 9, 1902.

the loss of the hair from brows and lids, unless they are carefully protected, as well as the possibility of untoward inflammatory and ulcerative action.

A decoction of *viola tricolor* or pansy tea is recommended by Behrmann¹ as remarkably efficacious in *acne vulgaris*. Mandalin has proved that the plant contains salicylic acid and magnesium tartrate. When the infusion is taken internally the heat and the salicylic acid cause sweating, and the excretion through the sebaceous glands is increased in amount and softened. The acid also dissolves the horny plugs in the sebaceous glands. The magnesium tartrate loosens the bowels, and the antizymotic action of the salicylic acid checks intestinal putrefaction. Pansy tea, Behrmann claims, has cured cases rebellious to all other methods of treatment, though he admits that local disinfection is also necessary. This is certainly a cheap, simple, and agreeable remedy, but it seems to fill almost too many of the indications. I have never used it myself, and I have found no other records confirmatory of Behrmann's experience; but it would do no harm to try it in conjunction with the local measures elsewhere recommended.

For the topical treatment of indurated and suppurating follicles H. L. Jones² uses a method very similar to that of Bronson, which was described in last year's article. After protecting the skin around the follicle with vaselin a finely pointed wooden toothpick is dipped into fuming sulphuric acid, the excess of fluid drained off on filter paper, thrust into the base of the pustule, and turned several times. There is but little pain. Even sensitive patients can stand having five or six nodules treated daily, and on the back many more can be treated at one time. Afterward each follicle is painted twice daily or oftener with turpentine.

Actinotherapy. During the past twelve months several new forms of apparatus for the therapeutic application of light have been announced. The aim throughout has been in the direction of simplification and cheapening, and while the forms proposed seem to be effective in certain limited fields, they all run on ampères so small that they cannot be expected to be useful in any but the most superficial affections. The experiments recorded last year,³ in which I proved that light could be made to penetrate the entire body, and which opened up a field for its employment in the deeper dermatoses and internal affections, were made with the concentrated light from a 50 ampère arc, representing at least 20,000 to 30,000 candle power. Light from arcs running on from 2 to 10 ampères have been proved to have but slight penetrative

¹ Dermatologisches Centralblatt, July, 1902.

² British Medical Journal. Monatshefte f. praktische Dermatologie, July 1, 1902.

³ PROGRESSIVE MEDICINE, September, 1902, p. 140.

power. Finsen,¹ in his recent publication upon the subject, is especially **emphatic** on this point, and, as will be seen later, other authorities agree with him. As the actinotherapeutic method has been developed by the dermatologists, and is as yet employed almost exclusively in their special field, I give a brief review of the progress made during the year.

APPARATUS. Models of smaller instruments have been made by Foveau de Courmelles,² Below,³ Broca and Chatin,⁴ Bellini,⁵ and others. Broca⁶ has improved the compressor which is necessarily employed with the low ampèrage lamps to get any tissue penetration at all; De Beurmann⁷ applies a 1:1000 adrenalin solution instead to expel the blood from the part. He claims that the blood does not return to the part even in a sitting of one hour. An improvement in his method was recently demonstrated at the New York County Medical Society by Piffard,⁸ cataphoresis being employed to drive the adrenalin into the tissues. The iron electrodes which Bang⁹ announced last year have appeared. They seem to work well for short periods with the small apparatus, the Dermo lamp, which I have seen; but the instrument is not powerful enough to influence the deeper tissues. The Broca and Chatin lamp¹⁰ has a negative metal and a positive carbon electrode. It is said by Leredde¹¹ to be a perfected form of the Bang apparatus.

In view of the limited efficiency of these smaller lamps Finsen concludes¹² that we must abandon them and return to the machines that concentrate large amounts of light. Currents of 20 ampères and 55 volts are the least that can be effectively employed. My own work has all been done with the actinolite, an American improvement of the Finsen apparatus, which permits of the greatest possible light concentration. Equipped with metallic carbons and lenses made of a glass whose transparency to the effective rays is as 80 to 100 compared with rock crystal, it is by far the most efficient actinotherapeutic machine at our present disposal.

THEORY OF ACTINOTHERAPEUTIC ACTION. Velyaminoff,¹³ as the result of over 500 experiments with pathogenic and non-pathogenic

¹ Mitteilungen aus Finsen's Medicinske Lysinstitut, iii.

² Medecine orientale; Monatshefte f. praktische Dermatologie, April 15, 1902.

³ Archiv f. Lichttherapie, 1902, No. 3.

⁴ Annales de Dermatologie et de Syphiligraphie, April, 1902.

⁵ Bullet. dell. Ass. Saint; Monatshefte f. praktische Dermatologie, September 15, 1902.

⁶ Annales de Dermatologie et de Syphiligraphie, April, 1902.

⁷ Ibid., July, 1902.

⁸ Medical Record, March 7, 1903.

⁹ Mitteilungen aus Finsen's Medicinske Lysinstitut, iii.

¹⁰ Annales de Dermatologie et de Syphiligraphie, April, 1902.

¹¹ Ibid.

¹² Ibid., December, 1902.

¹³ Roussky Wratch; Journal of the American Medical Association, April 12, 1902.

organisms of the most varied kinds, finds that the microbes are directly and rapidly destroyed by the light. Sack¹ lays special stress on its photochemical and inflammatory effect, but Nagelschmidt² agrees with the Russian investigator as to the great importance of the bactericidal effect. Bie,³ in a general résumé of the subject, notes the capillary dilatation which is so prominent a symptom of actinic action, and which may last for five or six months thereafter. James Weir, Jr.,⁴ holds that the action of the rays is primarily through stimulation of the vasomotor nerves. The first effect is dynamic—dilatation of the vessels and increased blood flow. The second is chemical, the blood-producing organs making new blood cells. There is also increased oxidation and oxygenation through the lungs. The third effect is physiological—cell growth is incited and new tissue is formed.

Leaving speculative considerations out of account, it is evident that both factors—direct bactericidal action and a photochemical effect upon the vasomotor nerves and the intima of the vessels—are concerned in phototherapeutic action. Remote but perhaps even more important effects are those of stimulation of oxidation and new tissue formation.

A point of importance is the fact that the reactive tissue changes are never violent or excessive. In an experience that now extends over several years, during which time I have employed the light at least once and often many times daily, I have never seen more than a moderate and self-limited amount of reaction. I have often had blister formation. Hyperæmia and swelling, with subsequent pigmentation, are the normal sequelæ of the prolonged action of the light; but all these phenomena recede of themselves in a day or two, and rarely require even the application of a dusting-powder. Deeper inflammation, ulceration, sclerotization, or loss of the hair does not occur. A number of former patients whom I see from time to time have had this treatment one to three years ago, and there has never been the slightest deleterious after-effects.

GENERAL CONSIDERATIONS. Bang⁵ divides actinotherapeutic action into positive and negative. The latter consists in keeping light or its chemically active elements from the skin, as is done in the treatment of variola and erysipelas; the former, in its application to the surface in condensed form, is now a recognized mode of treatment in many dermatoses and deeper affections. Von Ziemssen,⁶ reviewing the

¹ Dermatologisches Centralblatt, September, 1902.

² Archiv f. Dermatologie und Syphilis, 1903, Nos. 2 and 3.

³ Verhandlungen des Vereins f. innere Medicin, Weisbaden, April 15 to 18, 1902.

⁴ Scientific American, November 22, 1902; Medical Times, February, 1903.

⁵ Berliner klin. Woch.; Monatshefte f. praktische Dermatologie, April 15, 1902.

⁶ Festschrift zur Feier des 50-Jährigen Bestehens des ärztlichen Vereins Nürnberg Monatshefte f. praktische Dermatologie, June 15, 1902.

whole subject of phototherapy, holds that radiotherapy and actinotherapy are useful, completing each other. They can often be substituted for one another. Morris and Doré¹ do not consider the X-ray an adequate substitute for the Finsen treatment. The effects of the latter are more readily controlled, and the ultimate results are better.

TISSUE CHANGES. Sack² has made an elaborate study of the progressive and retrogressive tissue changes effected in various diseases by the light treatment, and comes to the following conclusions :

1. It first affects the bloodvessels, causing endothelial swelling and proliferation. Both in angioma and in lupus an endovasculitis is set up which finally obliterates the vessels.

2. Nothing like burning or cauterization occurs. There is no coagulation necrosis. The retrogressive changes are all cellular and elective.

3. Weakening of pathological elements and strengthening of normal ones are the two biochemical effects of the Finsen treatment, which Müller calls a "cellular therapy."

Nodules of lupus that had been treated were excised and examined by Pihlnow.³ He found the following changes : hyperæmia, dilatation of the lymphatic vessels and clefts, and serous imbibition of the skin. Eosinophile cells were numerous. There was chromatolysis and also vacuolation.

THERAPEUTIC RESULTS. This is, of course, the most interesting chapter in the year's record of actinotherapeutic progress, and it is also the most extensive one. The chief application of the method has been in the treatment of the parasitic dermatoses, but it has also been successfully employed in a number of other skin affections. The amount of material is too great for more than the briefest review, and this can be most readily made under the headings of the various diseases in which the method has been employed.

Lupus Vulgaris. The first application of actinotherapy on an extensive scale was made in this disease, and, with the related affections, it has remained the chief field for its employment. The cases that have now been treated at Finsen's Institute number at least 1000, almost all of whom have been cured. There have been a few intractable cases ; but with the vast majority the results have been excellent, far superior to all previous methods, and permanent. Finsen's conclusions are agreed to by a large number of observers whose results have been published, among whom I may mention Bang,⁴ Petersen,⁵ Schmidt,⁶

¹ British Medical Journal ; Journal of the American Medical Association, June 21, 1902.

² Dermatologisches Centralblatt, September, 1902.

³ Wratch, 1902, No. 15 ; Dermatologisches Centralblatt, November, 1902.

⁴ Berliner klin. Wochenschrift ; Monatshefte f. praktische Dermatologie, April 15, 1902.

⁵ Wratch ; Monatshefte f. praktische Dermatologie, April 15, 1902.

⁶ Archiv f. Dermatologie und Syphilis, March, 1902.

von Ziemssen,¹ Velyaminoff,² Danlos,³ Sack,⁴ and Hopkins.⁵ Klabowski⁶ reports on thirty-seven cases that all did well, and some of which were very old and obstinate ones. Gaston, Baudouin, and Chatin⁷ record seventy-eight cases, with complete and permanent cure in one-third. Of the remainder some came irregularly or disappeared before treatment was concluded. My own personal experience is in accord with that of Leredde and Pautrier,⁸ who also publish a long list of cured cases. I have elsewhere recorded my own results,⁹ and I believe that actinotherapy is the only lupus treatment fulfilling the two indispensable conditions of acting below the surface and entirely sparing the sound tissues. It cures almost every case.

Tuberculosis Cutis. Here the results are as good as in lupus. I have cured several cases in which the malady was of very long standing, and which had been ineffectually treated for months and years by other methods. Schmidt,¹⁰ Gaston,¹¹ Leredde and Pautrier,¹² and many others have obtained similar results.

Alopecia Areata. Among those who have used the method in this often intractable affection are Bang,¹³ Sack,¹⁴ Leredde,¹⁵ Schmidt,¹⁶ and Hyde and Montgomery.¹⁷ I have treated four cases, though none of them were very extensive, with surprisingly rapid return of the hair on the bald spots.

Nevus, Telangiectasis, etc. This is a new field for actinotherapy, and has given promising results in a class of cases in which we were formerly almost helpless. Several of the above-mentioned authors record cures. The treatment seems to excite an endovascular inflammation that finally leads to obliteration of the redundant vessels. Unfortunately, it is very difficult to employ it satisfactorily in infancy on account of the quietude that is required for long periods of time. I have succeeded, however, in some cases in putting the child to sleep with the help of the bottle or the breast, and then treating it. With

¹ Monatshefte f. praktische Dermatologie, June 15, 1902.

² Roussky Wratch; Journal of the American Medical Association, April 12, 1902.

³ Annales de Dermatologie et de Syphiligraphie, June, 1902.

⁴ Münchener med. Wochenschrift, 1902, Nos. 13 and 14.

⁵ Journal of the American Medical Association, September 13, 1902.

⁶ Wratch; Dermatologisches Centralblatt, July, 1902.

⁷ Annales de Dermatologie et de Syphiligraphie, April, 1902.

⁸ Ibid.

⁹ Philadelphia Medical Journal, January 10, 1903.

¹⁰ Archiv f. Dermatologie und Syphilis, March, 1902.

¹¹ Annales de Dermatologie et de Syphiligraphie, April, 1902.

¹² Ibid.

¹³ Monatshefte f. praktische Dermatologie, April 15, 1902.

¹⁴ Münchener med. Wochenschrift; Monatshefte f. praktische Dermatologie, October 1, 1902.

¹⁵ Annales de Dermatologie, April, 1902.

¹⁶ Archiv f. Dermatologie und Syphilis, March, 1902.

¹⁷ Journal of the American Medical Association, January 3, 1903.

older children and adults there is, of course, no such difficulty. I can recommend the treatment very highly, indeed.

Lupus Erythematosus. In this disease I have had rapid and very gratifying success. We are well aware of its obstinacy and liability to relapse with the ordinary methods. I have treated four cases with but one failure, and that was in a very old and extensive case, with much deformity, in which the patient was under treatment for only one month before he had to return to his home in Central America. Petersen,¹ Velyaminoff,² Chatin and Druelle³ record similar results. Leredde and Pautrier⁴ had twenty-three cases. Eleven were cured completely, three were improved, in six there was a "segmentary cure" of the patch treated, and three were failures. These patients had had altogether 802 galvanocautic séances, 382 scarifications, and 462 treatments with high tension currents in the past, with not a single patch cured. No comment is needed on facts such as these.

Cancer, Epithelioma, and Rodent Ulcer. Last year Bie, Leredde, Blacker and Sequiera, Sjögren, Helm, and others reported a series of cures. This year the literature of the subject is meagre, which I attribute to the fact that many investigators have been using the smaller, simpler, and cheaper low ampérage apparatus, to the inefficiency of which I have already called attention. Leredde⁵ and Velyaminoff⁶ have employed the more powerful apparatus, with at least as good results as those obtained from the X-ray. I have used it in one case only, and though the patient was progressing very nicely at the time, her patience soon gave out and she stopped treatment. My other cases were either extensive ones or with the disease so situated that rapidity was required, and I did not think it right to deprive them of the benefits of the caustic treatment.

Acne and Rosacea. On the same theory that has led to the successful employment of actinotherapy in angioma and telangiectasis, it would seem to be indicated in rosacea, more especially when the stage of permanent new vascularization has been reached. Finsen reports fifteen of these cases. Four were cured, five were greatly improved, one was still under treatment, and the remaining five stopped treatment after a short time. Bang⁷ reports good results, and so do a number of other investigators, but details are wanting. I have used it myself in

¹ Wratch; Monatshefte f. praktische Dermatologie, April 15, 1902.

² Roussky Wratch; Journal of the American Medical Association, April 12, 1902.

³ Journal des Maladies Cutanées et Syphilitiques, 1902, Nos. 7 and 8.

⁴ Annales de Dermatologie et de Syphiligraphie, April, 1902.

⁵ Annales de Dermatologie, April, 1902.

⁶ Roussky Wratch; Journal of the American Medical Association, April 12, 1902.

⁷ Berliner klin. Wochenschrift; Monatshefte f. praktische Dermatologie, April 15, 1902.

a number of cases of suppurative and indurated acne and rosacea ; but as they were mostly in young women who were in a great hurry to get cured it was not practicable to treat any of them by it alone, which deprives my records of much of their value.

Parasitic Diseases—*Ringworm, Favus, Sycosis, Pityriasis Versicolor, etc.* Von Ziemssen¹ has done well with the treatment in all these affections, and so also has Leredde.² This is apparently an excellent field for the method, though I should not advise its employment to the exclusion of such tried means as epilation and parasitocides. A combination of methods would give the best results.

Various Dermatoses. Actinotherapeusis has been effectively used by Petersen³ in *ulcus tropicum* ; Ginni,⁴ in *burns and wounds* ; von Ziemssen,⁵ in *psoriasis* ; Leredde,⁶ in *rhinophyma*, and by a number of investigators in *chronic eczematous* affections.

Of the obstacles in the way of the more general employment of the actinotherapeutic method in the treatment of dermal affections a number have been removed. Technical improvements have so increased the efficiency of the apparatus that the time required for treatment has been reduced one-half. Installation, however, is expensive, and it is hardly suited to public practice. This accounts for the comparative paucity of statistical results that are as yet available.

Primary Actinomycosis of the Skin. While secondary infection of the skin is not uncommon in actinomycosis, primary involvement of that organ, as noted last year,⁷ is rare. To the sixteen cases on record Böhm⁸ now adds another. The case was that of a butcher who infected himself upon the back of the head. There was a large, reddened infiltration containing some fifteen or twenty pea-sized to hazelnut-sized tubercles. Some of these were hard, while others were soft and fluctuating, like abscesses. A thick brown fluid exuded when these latter ruptured. The deeper parts, the periosteum and the bone, were entirely unaffected. The lymphatic glands and the mouth were normal. Probing demonstrated the fact that the abscesses communicated with one another and that the entire infiltration was undermined. At first there were no fungi in the pus ; later they were demonstrated. The abscesses were all laid open, and they were thoroughly injected with

¹ Monatshefte f. praktische Dermatologie, June 15, 1902.

² Presse Médicale ; Monatshefte f. praktische Dermatologie, September 15, 1902.

³ Monatshefte f. praktische Dermatologie, April 15, 1902.

⁴ Medicinische Wochenschrift ; Monatshefte f. praktische Dermatologie, April 15, 1902.

⁵ Monatshefte f. praktische Dermatologie, June 15, 1902.

⁶ Presse Médicale ; Monatshefte f. praktische Dermatologie, September 15, 1902.

⁷ PROGRESSIVE MEDICINE, September, 1902, p. 143.

⁸ Archiv f. Dermatologie und Syphilis, March, 1902.

pure tincture of iodine daily. Though the disease had lasted a year it was entirely cured in twenty-five days. The infection probably came through handling an infected steer or pig and then scratching the head. In this case there was no iodide of potassium given internally. Iodine internally and externally is practically a specific for the disease, and it seems that where the affection is limited to the skin its external application is all that is required. It raises an interesting question as to the limitation of the value of the iodide as the "touchstone of treatment" in suspected syphilis. A number of affections are favorably affected by the administration of the drug, and one of them is actinomycosis, which is extremely liable to resemble the luetic disease in its manifestations.

Alopecia. In searching for the cause of baldness Elliott¹ suggests the existence of an anatomical factor that may be of importance. He found the parietal foramina absent in a number of skulls that he examined, hence the emissary veins and lymphatics of the region must have been very small indeed in these cases. The return circulation would have been interfered with in the very areas that first get bald. The effect of wearing hats during a large part of the day—a bad habit that is very common among business men—has long been suspected to be a factor in the production of baldness, and has recently been condemned editorially.² Both causes working together in a given case would, it seems to me, be efficient agents in causing premature atrophy of the glandular structures of the scalp. Besides this in the regions most subject to baldness the muscular layer is separated from the bone only by the aponeurosis, and muscular action must further interfere with the circulation. The tendency to-day is, of course, entirely in the direction of assuming the existence of an organic etiological factor for the affection; but the labors of Unna and Sabouraud have not as yet led to any conclusions that have obtained general acceptance. These other factors are well worth consideration.

As usual, interest during the year has centred upon the rather mysterious form of baldness known as alopecia areata. I use the term advisedly, for the very large amount of work that has been devoted to the disease during recent years has not resulted in any material elucidation of its nature. Is it a disease entity or merely a symptom? If the former is the case, how can its varying behavior, its strict limitation to a very small area or rapid involvement of the entire surface, its apparent amenability to any form of treatment, or its absolute recalcitrancy to all measures, be explained? If it is merely a symptom,

¹ Journal of the American Medical Association; Cincinnati Lancet-Clinic, July 26, 1902.

² Journal of the American Medical Association, July 24, 1902.

what are the underlying diseases? I cannot say that the work of the past year has done much to supply answers to these questions.

In the French Dermatological Society meeting of June of last year, Jacquet,¹ apropos of a case of alopecia areata of the beard associated with neuralgia from carious teeth, which recovered after the extraction of the diseased molars, advanced a theory of the dental origin of the malady. Galippe and others called attention to the very obvious objection to this theory that dental caries is very common, indeed, while alopecia areata is quite rare. Sabouraud reiterated his well-known opinions as to the parasitic nature of the affection; and Du Castel and Barthelemy, with almost all the other members present, regarded Jacquet's theory unfavorably. No further facts in support of it have as yet been published.

Plonski² has reported a small epidemic of the disease, occurring in four boys who lived together. The very rarity of such an occurrence is good evidence of the non-contagious nature of the affection. In an experience of over twenty years, in each of which I have encountered quite a number of cases, since the disease is by no means so rare in New York as in some parts of Europe, I fail to remember a single instance in which I have found several members of the same family affected.

On the other hand, Moty,³ reporting on 289 cases observed in soldiers of the Paris garrison, states that about 2000 cases are recorded annually in the French army. He concludes that in the army, at all events, it is most commonly an epidemic affection; that it is always a spreading surface contagion; that antiseptic treatment seems to limit its spread; that the nape of the neck is the part most frequently affected; that it often persists in a latent condition, reappearing when apparently cured; but that some cases are apparently neurotic in origin, and are very rebellious to treatment.

It is very evident, as stated in last year's review, that alopecia in areas is a symptom of at least two and possibly more distinct affections, and that it is not *per se* a disease at all. It is to be hoped that the near future will bring us some more definite knowledge than we possess at present of their nature.

To the three previous cases of *infantile alopecia* that he has reported Audry⁴ has added a fourth. It was an otherwise healthy child, aged four years, in which there was no hair in the usual localities, even on

¹ Annales de Dermatologie et de Syphiligraphie, June, 1902.

² Archiv f. Dermatologie und Syphilis, November, 1902.

³ Annales de Dermatologie et de Syphiligraphie, May, 1902.

⁴ Journal des Maladies Cutanées et Syphilitiques; Monatshefte f. praktische Dermatologie, April 15, 1902.

the brows and lids, except a little lanugo upon the scalp. The only normally vigorous hairs were a very few upon a small pigmented nævus in the same locality. Baudouin¹ has had a very similar case in a child of the same age; there were only a few countable hairs on the scalp. We are entirely ignorant of the nature and cause of this congenital deformity.

A good deal has been written on the *treatment* of the various forms of alopecia. Moty² advocates intradermic sublimate injections, 4:1000, for alopecia areata. He has treated ninety cases in this way, the average time required for cure being forty days. Sublimate lotions of the same strength were used in twenty-seven cases; time, fifty-three days. By other methods, such as the use of iodized collodion, he treated five cases; time, eighty-three days. Heidingsfeld³ found the X-ray useless in these cases, and pleads for the employment of tricresol. Pure carbolic acid has long been a standard application, and several years ago I experimented with trikresol, which is similar but stronger. I soon gave it up, however, since the patients invariably disappeared; and in the single case from which I heard later through a friend a violent inflammation with the formation of bullæ had been occasioned. Diluted, however, to the strength of carbolic acid or less, I believe, with Heidingsfeld, that it will be found an efficient preparation. I now use the Finsen light in all my office cases of this kind, and am well satisfied with the results. They are certainly better than those obtainable by any other method; I have secured an abundant growth of lanugo hair over a bald spot in as short a time as three weeks in one case.

Anthrax. This term is employed for ordinary carbuncle by many dermatologists, but improperly, which has led to some confusion in the text-books. It should be restricted to the rare malady occasioned by infection with bacillus anthracis, the cutaneous manifestation of which is known as malignant pustule. Carbolic acid injection is the recognized treatment, to which Strubbel⁴ adds the employment of moist heat. He injects the mass thoroughly with 3 per cent. carbolic acid, and applies poultices at 63° C. (145° F.). He claims that the bacilli are destroyed in the tissues themselves by the heat. If that is the case it would be well to use one of the forms of hot air apparatus now in vogue in place of the poultices when the malady is so located that this apparatus can be used.

Atrophy of the Skin. In a former issue⁵ I discussed a number of cases of this interesting affection. Since then it has been studied by

¹ Annales de Dermatologie et de Syphiligraphie, August, 1902.

² Ibid., May, 1902.

³ Cincinnati Lancet-Clinic September 20, 1902.

⁴ Deutsche med. Wochenschrift, 1902, No. 23.

⁵ PROGRESSIVE MEDICINE, September, 1901, p. 140.

Heuss,¹ Juliusberg,² Matcherski,³ Krzysztalowicz,⁴ Walter Pick,⁵ H. E. Schmidt,⁶ Ravogli,⁷ and Robert Abrahams and myself.⁸ There is sufficient agreement in the recorded clinical features to establish the affection as an entity, though its pathogenesis is still debatable. Heuss made a careful microscopic examination of recent and older areas, and finds that it is a very low-grade inflammation spreading from the vessels

FIG. 9.



Case of Abrahams and Gottheil.

of the cutis and papillary layer and leading to the complete disappearance of the elastin. Pathogenetically it seems to be a hæmatogenic autotoxic dermatosis. It may occur idiopathically or secondarily in connection with vascular disease or tumors. In Juliusberg's case there was no evidence of present or preceding inflammation. Ravogli considered the affection due to nervous influences in his case. It was the end result of an inflammatory process caused by irritation or paralysis of the vasomotor centre.

The case described by Abrahams and myself was an extremely marked one, as the accompanying illustration shows (Fig. 9). The entire integument of both lower extremities, as well as that over the pelvis, was affected. The skin was so thin as to be absolutely transparent, permitting the entire superficial venous system to stand out as if its lumen had been filled with a blue injection mass. The integument itself looked like wet tissue paper; it was crinkled and shiny, and, taken up between the fingers, felt like a piece of thin paper.

The entire affected surface was covered with fine, glistening, branny scales. Around the ankles and on the dorsum of the feet were a number of

¹ Monatshefte f. praktische Dermatologie, vol. xxxii., Nos. 1 and 2.

² Annales de Dermatologie et de Syphiligraphie, July and August, 1901.

³ Monatshefte f. praktische Dermatologie, January 1, 1902.

⁴ Ibid., December 1, 1901.

⁵ Dermatologisches Centralblatt, December, 1902.

⁶ Archiv f. Dermatologie und Syphilis, January, 1903.

⁷ Journal of the American Medical Association, January 10, 1903.

⁸ New York State Journal of Medicine, January, 1903.

chronic ulcerations seated in masses of indurated tissue. Most interesting, however, was the condition of the integument at the progressing margins of the affected area, over the gluteal regions and along the outer and inner edge of the soles. Here there were distinct evidences of a chronic inflammatory process in the shape of a continuous, thickened, erythematous margin, which over the buttocks was at least two inches broad. According to the patient's history the affection began some thirty years before with redness, swelling, and itching on the backs of the feet. The inflammatory symptoms gradually spread peripherally, leaving the atrophy behind, and the margins are now in about the same condition that the areas first affected were in the beginning.

Microscopic examination of portions of skin taken from the advancing margin on the buttock and from a fully atrophied area was made. In the first I found engorgement of the blood and lymphatic vessels with a surrounding cell infiltration consisting mostly of plasma cells, with a small number of leucocytes, the ordinary evidences of inflammatory action. The other sections showed a general atrophy of all the structures of the skin. The subcutaneous fat was entirely absent, and the glandular structures were greatly diminished in size and number. In all of the 500 sections only a few small sweat and sebaceous glands and some atrophied hair follicles were found. All the various layers of the epidermis were thinned and composed of one-half to one-third of the normal number of epithelial strata. The papillæ when present were flattened, thickened, clubbed, and as if fused together; but in many places they were entirely absent, the lower layer of the epidermis forming a straight line under which no trace of the normal papillary undulations could be found. The corium was also thinned, the decrease in the number of elastic fibres being especially marked.

This satisfactorily proves the inflammatory nature of the affection, and I advocate the substitution of the term "dermatitis atrophicans" for the older one of *atrophia cutis idiopathica*. Of its causes we are entirely in ignorance. As is the case with a number of other supposedly rare maladies, I think the disease is commoner than is generally supposed. In its earlier stages it is probably looked upon as a chronic erythematous eczema; and if the patient lives long enough to reach the markedly atrophic stage he has probably long since given up all hope of cure, and does not come to the clinics. Since I directed the attention of my assistants to the affection last year two other cases, of eight and five years' standing, respectively, have been found. They were very much less extensive than the one here pictured; the last one had all the four extremities affected, and showed upon both forearms and hands, where the process had been present only one year, a diffuse

permanent erythema precisely similar to that at the margins in the older cases.

There is no treatment for the affection. The most that can be done is to improve the general health and endeavor to better the condition of the affected skin by oil inunctions, salves, etc.

Blastomycosis. For some unknown reason few new cases of this disease have been reported during the past year. Attention has been devoted to the thorough clinical and pathological study of the material that is so astonishingly abundant in certain districts. The most important résumé is that of F. H. Montgomery,¹ based upon fourteen cases observed by Hyde and himself. Ten of these cases were under observation for a year or longer. Histological studies were made in thirteen and cultures in eleven cases. Clinically the disease is a chronic local infection; no constitutional disorder has any relation to it, and the general health is usually good. Sex, occupation, nativity, or habits have nothing to do with its development. It is seen oftener in males than in females, because they are more exposed to infection. It most often occurs on the exposed face and hands.

The lesions are papular or papulopustular, and enlarge slowly into flat, warty tubercles. New ones appear around them, and are inoculated onto other parts. Later, ulceration and exuberant granulation may occur. Scar tissue is the ultimate result; but the margins will always show the characteristic purplish tuberous masses full of minute abscesses. Some of these latter are so small that a lens is needed to see them, but the small amount of glairy mucopus that they contain is the best source for pure cultures of the organism. The course of the lesions is irregular, but very chronic; it may take months for one to attain the size of an inch. But they may finally become very large, spreading at the periphery as they heal in the centre, and causing contractures, ectropion, and other deformities.

The histopathology admittedly resembles that of tuberculosis cutis and carcinoma. There is specially marked hyperplasia of the rete, which sends processes containing the characteristic abscesses into the rete. The number of blastomyces present varies greatly; a good section may contain three to six, but dozens of sections may not contain one. Budding forms are readily found, and show well with the hæmatoxylin-eosin stain. In general, methylene blue or polychrome methylene blue and orange tannin are the most satisfactory stains. The methods of clinical demonstration were detailed in the issue of last year.²

The diagnosis undoubtedly presents difficulties. The resemblance of the affection to tuberculosis verrucosa cutis is great. The military

¹ Journal of the American Medical Association, June 7, 1902.

² PROGRESSIVE MEDICINE, September, 1902.

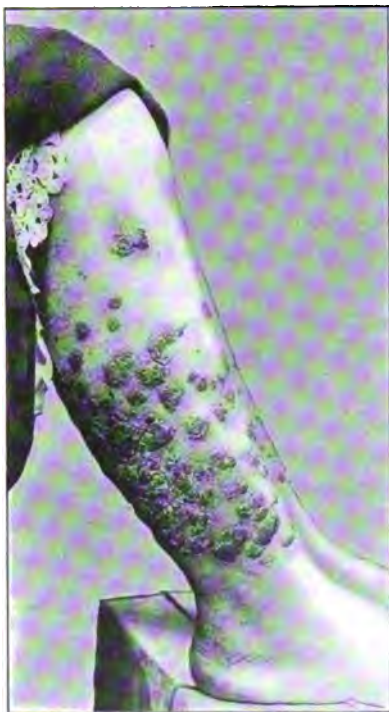
abscesses and the demonstration of the organisms in the pus and in **sections** are the distinguishing features. Any case of chronic tuberculous spreading inflammation of the skin should be suspected, and it is **very easy** to make the microscopic diagnosis.

As regards treatment, excision has been successful in some cases, but curetting does not seem to have removed the affection. Iodide of potassium in large doses (200 to 500 grains daily), as originally employed by Bevan, has sometimes cured. In other cases, however, the affected skin could not be restored by it. One patient was cured by the X-ray. In this connection I may mention that some time ago, before attention had been drawn to the blastomycetic dermatosis, I treated an American resident in Ecuador for tuberculosis verrucosa cutis of the back of the hand. The tuberculous infiltration had been slowly increasing in size for several years. It was supposed to have been occasioned by the bite of an insect known locally as a "chigo," and had been treated ineffectually by many physicians. It had all the clinical features of a tuberculosis, with the exception that from time to time a prickling sensation would annoy the patient, which would be relieved by pressure and the evacuation of a very small amount of pus. The patient was entirely cured by some thirty applications of the Finsen light. The pus was not examined, but in view of what we now know of blastomycosis I believe that this was a case of the kind.

Meneau¹ concludes that there is united under the name of blastomycosis affections caused both by vegetable yeasts and animal coccidia.

The generalized and usually fatal forms seem to belong to the latter. Almost all investigators have been able to isolate, cultivate, and inoculate the organism; but the morphological description has varied greatly, so that classification is still impossible. The affection is clinically a

FIG. 10.



Bromoderma. (Wallhauser's case.)

¹ *Annales de Dermatologie et de Syphiligraphie*, June, 1902.

verrucous tuberculosis, with absence of the bacillus and presence of the blastomyces. In doubtful cases the non-finding of the blastomyces speaks for tuberculosis, for the bacillus is often missed, while the other organism is readily found.

Bromoderma. In last year's issue I discussed the eruptions occasioned by the internal administration of iodine. Bromine and the bromides have similar effects, and T. F. Wallhauser¹ has recorded two cases. The patient having the lesion here illustrated (Fig. 10) was a girl, aged fifteen years, who had been taking bromide of potassium in ten-grain doses every three hours for violent attacks of hysteria. In the third week of treatment an eruption of disseminated and grouped vesicopapules appeared on the legs, which soon dried up into yellowish-green crusts surrounded by a zone of inflammatory redness. The cause of the eruption was at once suspected and the bromide stopped. The eruption disappeared in seven weeks under carron oil. Wallhauser also reports another case in a female epileptic, aged thirty-six years. She had for a year been taking a proprietary medicine of unknown composition, but probably containing bromine. Here, also, the lesion was upon the legs, and consisted of an hypertrophic fungoid growth, though at the margins, where it was slowly extending, it was vesiculopapular. This case recovered in ten weeks under the same treatment.

Bromine eruptions are extremely common. Voisin² claims that they occur in 75 per cent. of cases taking the salts. The predisposition is general, and sometimes very small doses will occasion them. Moreover, tolerance does not set in from protracted use. By far the commonest form, of course, is that of acne, but erythematous, urticarial, bullous, and tuberos varieties are occasionally seen. The last is commonest upon the legs, though it has been noted upon the face. Occasionally the lesions are polymorphous, consisting of combinations of the simpler types. Bromine has been demonstrated in the sebaceous secretion in all the types of lesions, which are undoubtedly due to the irritation thus occasioned. It would be very desirable for someone who has access to large numbers of patients taking bromine, as in an epileptic hospital, to make a thorough study of the clinical and histopathological features of the eruptions occasioned by its use.

Bubo. While the great majority of all inguinal buboes are venereal—i. e., chancroidal or gonorrhoeal in origin—we all occasionally meet cases that are exceptional, occurring without any such accompaniment, and which, for want of a better name, we call idiopathic. Cedercreutz³ claims that one-seventh at least have have no venereal cause. He

¹ Journal of Cutaneous and Genito-urinary Diseases, May, 1902.

² Jarisch. Die Hautkrankheiten, p. 131.

³ Therapie der Gegenwart, August, 1902.

advocates a conservative expectant treatment for these non-venereal buboes—pressure with bags of hot sand, alcohol bandages over zinc paste, or acetate of aluminum moist compresses. In the very earliest stages ice-bags are useful. If suppuration is present, and especially if an isolated gland only is affected, a very small incision in the most dependent portion of the tumor, followed by one or more injections of 1 to 2 per cent. nitrate of silver solution, or, better, of 10 per cent. iodoform vaselin, is appropriate. My own experience leads me to agree with him very thoroughly. I believe the very free so-called surgical incision to be quite needless in these cases. The patient is incapacitated for work, and there is certainly some difference as far as comfort and risk is concerned between a three-inch and a half-inch incision. Nine out of ten of these cases heal with puncture and injection. Curetting, tamponade with iodoform gauze, and total excision may well be reserved for the very few cases that do not heal up under the simpler treatment.

Eniar Lundsgaard¹ has examined the hospital statistics at his disposal for a period of eight years, excluding the worst cases, in which rupture had occurred before admission into the hospital. There were 337 cases in all treated by the expectant method. Of these 176 (52 per cent.) broke or had to be perforated; 17 were unchanged at the time of discharge, and all the remainder (45 per cent.) were absorbed. In this latter category there were 42 that were goose-egg-sized and fluctuated plainly. In some special years the statistics were even better, 60 per cent. being absorbed. A conservative treatment of these idiopathic buboes is fully justified.

Carbuncle. The best treatment of this common affection is still a matter of dispute; abortive and radical measures still contend for supremacy. A. Bidder² has used the following method for two years with good success, and claims that it aborts infection in all cases and renders further operation unnecessary. He injects a 2 per cent. carbolic acid solution with an ordinary hypodermic syringe armed with a large needle, inserting it at an angle of forty-five degrees half-way between the softened centre and the indurated margin. The point of the needle is carried to the centre of the infection just beneath the skin. Half the contents of the syringe are then injected, the rest being introduced on the other side of the tumor in the same way. There is some pain and a slight increase in the swelling, but in a few days the carbuncle shrinks into a small indurated mass and disappears.

Loewy³ represents the opposite position, and advises immediate

¹ Hospitalstidende, 1902, No. 39; Dermatologisches Centralblatt, September, 1902.

² Deutsche med. Wochenschrift, May 1 and 8, 1902.

³ Le Bulletin Médicale; Indiana Medical Journal, July, 1902.

extirpation. He recounts histories of ten cases in support of his thesis. His method is as follows: The whole tumor is divided into four quarters by a crucial incision, the four skin flaps dissected up, and the tumor excised. Compression is kept up until the entire mass is removed and all the vessels are ligated. The wound is irrigated with peroxide or permanganate of potash solution and a dressing of 1 : 400 carbolic acid applied. The author claims that neither diabetes nor albuminuria contraindicates the operation.

I have used both methods with good results, but I prefer the carbolic acid injections in all ordinary cases.

Carcinoma and Epithelioma. A good deal of attention has been paid during the past year to the importance of various skin lesions, especially angiomas, as signs of incipient carcinoma of the skin. E. Hollaender¹ calls attention to the frequency of naevi, warts, and pigmented areas in persons with incipient or developed cancer, and considers them valuable premonitory signs. He claims to have observed cases in which they developed suddenly before the advent of the tumor. Leser² states that multiple very small angiomas are a frequent accompaniment of cancer of the skin, though not as yet a recognized sign of the disease. They are pinhead to lentil-sized, bright red to purple, slightly prominent tumors, non-effaceable by pressure, seated most commonly upon the trunk, less frequently upon the limbs, and hardly ever upon the hands or feet. He has found from eighteen to fifty-eight of these angiomas present in different cases. They are very rare in non-carcinomatous individuals, and their number and occurrence in early life give them diagnostic value.

In the discussion that followed the reading of Leser's paper in the Halle Medical Society, Genzmer took the very correct position that these angiomas were only related to carcinoma inasmuch as they showed general weakness of the tissues and a tendency to retrogressive changes. My own experience is that it is quite common to find multiple degenerative changes of various types in the same individual, such as vascular, pigmentary, and hypertrophic naevi, a cystic growth, and senile warts. Such cases are very likely to show carcinomatous degeneration of one or many of the lesions. I regard their relation to the more serious affection as purely accidental. Of course, if, as seems likely to be the case, cancer is finally shown to be of parasitic origin, it is readily conceivable that these degenerated areas will be the favorite sites for its development.

Gabele³ has examined 21 cancer and 200 other cases, with a view

¹ Centralblatt f. Chirurgie, April 26 and May 3, 1902.

² Monatshefte f. praktische Dermatologie, July 15, 1902.

³ Münchener med. Wochenschrift; Monatshefte f. praktische Dermatologie, July 15, 1902.

of determining the value of the sign, and his opinion is decidedly adverse. He found it in half the cancer cases, but it was also present in a large proportion of the others.

The year has brought but little that is new in the treatment of cutaneous carcinoma. The X-ray has been largely, and the Finsen method to some extent, employed, but neither can as yet claim to be established as an accepted method of treatment. Allen's conclusions represent the position that seems rational, and, as they summarize our present knowledge upon the subject, I repeat them :

1. Cutaneous cancer is traceable in almost all cases to preceding local irritation.

2. There may be other causes, but infection is probably a source of the disease.

3. Benign epitheliomatous proliferation may be infectious.

4. Cancer is curable, but if the disease is allowed to progress the patient may not be.

5. Only the most radical treatment is tolerable.

6. Caustic paste, with subsequent caustic dressing, is radical, and is often preferable to the knife.

7. The earlier cancer is treated the less likelihood is there of relapses or metastases.

8. The X-ray bids fair to be as effective as caustics.

Calcification of the Skin. Two years ago, under the heading of "Dermal Concretions,"¹ I noted Profichet's case of this very rare affection. Since then a number of cases have been reported. Rénon and H. Dufour² had a case of phosphatonodular fibromatosis in a rheumatic male, aged twenty-seven years. Three years before there had appeared disseminated subcutaneous nodosities on the thighs, arms, and in the lumbar region. They were from grain to cherry-stone in size, plane or globular, hard, and freely movable under the finger; they grew very slowly. Incision showed them to be chalky; chemical examination demonstrated that they contained no urates, uric acid, or calcium carbonate. They were composed of chalk, 12.38 per cent.; phosphoric acid, 8.84 per cent., and organic matter, 20.35 per cent.

Riehl³ reported a case to the Leipzig Medical Society. It was in a female, aged thirty-one years, who, since her sixteenth year, had had pea-sized subcutaneous tumors upon her hands, grouped in places to form hazelnut-sized patches. From time to time one of them on the fingers would become irritated and painful, ulceration would occur, and a chalky mass exude. The concretions were supposed to be gouty, but

¹ PROGRESSIVE MEDICINE, 1901, p. 155.

² Annales de Dermatologie et de Syphiligraphie, July and August, 1901.

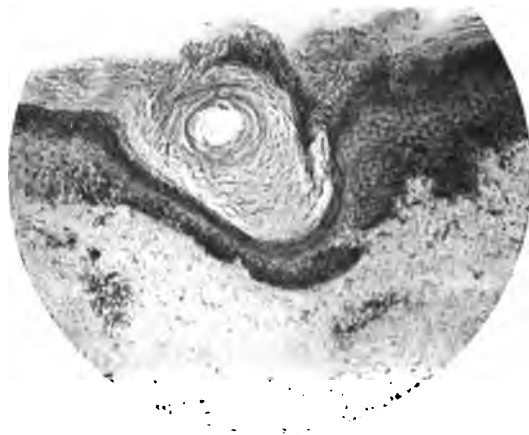
³ La Tribune Médicale; Medical Bulletin, June, 1902.

examination showed that they were composed of calcium carbonate and phosphate, and not of uric acid. P. Thimm¹ has recorded a similar case in which the hands were affected.

It is very probable that all these cases are simply instances of sebaceous retention cysts that have undergone calcareous degeneration.

Chromidrosis. The solid constituents of the sweat, though only 11.8 parts per thousand, are of very complex constitution, neutral fats, cholesterin, volatile fatty acids, creatinin, as well as traces of albumin, aromatic oxy-acids, sulphur compounds of phenol, and skatoxyl, being present in the excretion. Under exceptional circumstances its color is

FIG. 11.



Chromidrosis. Section showing hyperkeratosis around hair follicle opening and pigment accumulation in the rete. (Heidingsfeld's case.)

changed to yellow, red, green, blue, or even blackish. We are very much in the dark, however, as to the nature and rationale of these changes. Many of them are undoubtedly due to chemical changes in the secretion under nervous influence, but the yellowish-red or red sweat is mostly due to the presence of chromogenic bacteria, as Eberth, Babesi, Balzer and Barthelemy, and others have shown. Heidingsfeld² makes an important contribution to the pathology of the affection. He found the sweat glands of the affected area normal, but the sebaceous glands absent. There was hyperkeratosis around the openings of the hair follicles, and pigment accumulations around these structures in

¹ Archiv f. Dermatologie und Syphilis, vol. lxii. p. 163; Dermatologisches Centralblatt, February, 1903.

² Journal of the American Medical Association, December 13, 1902.

the stratum corneum, lower rete layers, and the adjacent cutis. This **pigment** was grouped in cell-like masses, was not finely granular, and **was** not bleached by hydrogen dioxide like the chromophores. Spectroscopic examination of the pigment showed no absorption bands; hence **it is** not an oxyhæmoglobin derivative. Heidingsfeld regards the **affection** as a pigment anomaly, and not an affection of the sweat glands at **all**. (Figs. 11 and 12.)

I cannot regard these findings as conclusive, even in Heidingsfeld's **individual** case. How does the rete pigment reach the surface and **become** mixed with the sweat? Why does no similar sweat admixture

FIG. 12.



Chromidrosis. Circumscribed accumulation in the rete. (Heidingsfeld's case.)

occur in any of the various other affections in which similar pigment accumulations are found? Further investigation of these cases is needed before we can have any very definite idea of the nature and mode of origin of the abnormality.

Cornu Cutaneum. These have always been interesting cutaneous anomalies. As long ago as 1864 Lebert collected 109 cases from the literature, and there are now records of over 200. They usually occur in old persons, and in over half the cases are situated upon the face and head. They are usually single, but Lewin had a case that had eight and Heschle one that had sixteen. They are very prone to grow again after accidental or purposed removal. Their size is usually from two to four inches, though Dubroudy, Alibert, Dumonceau, and Horne have recorded cases 24 to 30 cm. in size. They are generally cylindrical or conical, and twisted, and of a yellow to dark brown color.

Marcuse¹ records a case in a female, aged thirty years, who had slight onychogryphosis of both great toes. On the backs of the middle phalanges of both fourth toes were the horns, the right one being 1 cm. and the left 0.7 cm. in height. Audry and Dalous² note one that is of interest on account of the youth of the patient. It was seated on the right lower lid of a child, aged nine years; the growth was 3 mm. long. Diehl³ has recorded a recent and very marked case. The patient was a man, aged forty-five years, who had been operated on five years before for epithelioma of the lower lip. Three years later a

FIG. 13.



Cornu cutaneum. (Diehl's case.)

small horn appeared on the opposite side of the same lip. At the end of two years it was two inches long. It was curved, and with an oval base that was three-quarters of an inch in diameter. Its color was brown, and while the outer layers were hard the interior was soft and friable. (Fig. 13.)

Histologically, these structures are closely related to warts, hypertrophied rete and papillæ, with superincumbent hyperkeratosis being the essential features. The only treatment, of course, is excision, or erosion followed by destruction of the hypertrophic papillæ with the cautery.

Dermatomyiasis. This affection is not very uncommon in the country, more especially in Eastern Europe, where the habits of the peasantry are not of the cleanest. It is rarely seen in the cities, and but few cases have been recorded. L. Klein,⁴ at the Vienna Dermatological Society, reported a case in a child, aged five years. She had had an impetiginous eczema of the head for some time, and suddenly fell sick with fever and violent general symptoms. The odor from the head was terrible. Under two nut-sized crusts were found two deep holes full of worms. The entire tissue of the scalp was undermined, so that the skull was laid bare in places. The parasites were 1 cm. long, and as thick as a thin lead-pencil. They were at once recognized as the sarcophili Wohlfarti, and a number of them were kept, and

¹ Archiv f. Dermatologie und Syphilis, May, 1902.

² Journal des Maladies Cutanées et Syphilitiques; Monatshefte f. praktische Dermatologie, October 10, 1902.

³ Buffalo Medical Journal; Annales de Dermatologie et de Syphiligraphie, January, 1903.

⁴ Wiener med. Wochenschrift; Monatshefte f. praktische Dermatologie, July 15, 1902.

after passing through the chrysalis stage developed into the full-grown fly. After removal of the larvæ and sublimate disinfection of the sinuses all the lesions healed up in two weeks under iodoform gauze.

In the discussion that followed Neumann called attention to the fact that fly larvæ among the various parasites in *plica polonica* was formerly commonly seen in Vienna. Spiegler has found fly larvæ in neglected leg ulcers. They soon disappeared under sublimate compresses. In point of fact, any eroded or ulcerated surface may become infected during the summer, when the flies are laying their eggs, and my experience is that it is not always easy to get rid of them. In a case that I reported several years ago, in which the patient's body was covered with cutaneous and subcutaneous hypertrophic and ulcerated gummata, it was found absolutely impossible to keep the fly larvæ out of them. The patient had about seventy lesions, varying in size from a walnut to a large orange. All kinds of mercurial and other antiseptics were employed without avail. He finally died of exhaustion.

Dermatomyiasis of another variety is reported by Topsent.¹ It occurred in a neighborhood where the cows frequently have the hypoderma bovis (Geer) under the skin. The affection is called "crû," and is looked upon as a sign of good health in the animals. A child, aged eight years, sickened with violent pains in the left clavicular and scapular regions, so severe at times that the patient became senseless. After varied but ineffectual medical treatment the father suspected the presence of the parasite, and found the openings of the larval paths. He removed the larva with a needle. The parasite had travelled 64 cm. under the skin from the point of entrance. It had gone from the inguinal fossa to the left infraclavicular region and over the left shoulder to the back of the right arm and the neck. Zoologically the parasite was a larva of the second stage of the *hypoderma lineata* of Villers.

It is probable that dermic infections of the kind here noted are commoner than is usually supposed, and that they are the cause of some obscure urticarial, eczematous, and pustular eruptions. A more careful search for the etiological factor would undoubtedly be useful in quite a large proportion of cases. Thus W. Heinecke² records two cases of very obstinate urticaria, coming on at night, in the persons of two women patients in a sanatorium. Both had nephritis and were confined to bed, and as there was nothing gastrointestinal to account for their urticaria it was ascribed to their kidney disease. But the persistency of the nocturnal attacks led to a more careful search for

¹ Archives de Parasitologie ; Monatshefte f. praktische Dermatologie, July 15, 1902.

² Münchener med. Wochenschrift ; Monatshefte f. praktische Dermatologie, July 15, 1902.

their cause, and this was finally found in the bird lice in the nests of some swallows just outside the window of their room. These parasites, like the bed-bug, secrete themselves during the day and come out at night for food.

Diabetic Skin Diseases. It is a matter of common observation that diabetics are especially subject to various inflammatory skin affections, yet the only one that is treated in the text-books is the severest and perhaps the commonest of them all—the diabetic gangrene. But other forms frequently occur; and here in New York, where diabetes is common in the foreign-born population, I see a number of cases in consultation every year. While to a certain extent these eruptions are like those of non-diabetic origin, they are peculiar in their special recalcitrancy to treatment, so that I make it a routine practice to examine the urine for sugar in every obstinate dermatosis. Sherwell¹ finds xeroderma (which I should prefer to call chronic eczema), eczema, and furunculosis the commonest of these affections. A more elaborate study is that by Saalfeld,² who finds that there occur the following specific diabetic dermatoses: xanthoma diabeticorum, diabetic gangrene, diabete broncé, diabetic dermatitis of the papillomatous form, and perforating ulcer of the foot. Occasional concomitants of the general disease, but not directly occasioned by it, are: pruritus, local and universal; eczema, more especially around the genitals; balanitis, anhidrosis, and asteatosis, while hyperhidrosis, urticaria, and the erythemas are rarer. Saalfeld claims to never have seen a case of psoriasis associated with diabetes; but at the discussion of his paper at the Seventy-fourth Meeting of the German Naturalists and Physicians at Carlsbad, in September, 1902, where his paper was read, Böhm recounted a case in point, in which the psoriasis got better as the sugar diminished. Pick called attention to the great tendency of diabetics to have alimentary glycosuria. The relation of syphilis to glycosuria and glycosuric eruptions was also discussed. Both the latter may be caused by syphilis, and react to antiluetic treatment. On the other hand, the administration of mercury may cause sugar to appear in the urine.

In the treatment of these diabetic skin affections the treatment of the general disease is even more important than that of the local affection. I find it hard to impress the truth of this upon the patients, especially in the not infrequent cases in which the dermal affection is the first and most troublesome symptom of the disease; yet I must admit that the success of our dermatotherapy in these cases is entirely and directly dependent upon the reduction of the amount of sugar in

¹ Medical News; Monatshefte f. praktische Dermatologie, February 15, 1902.

² Dermatologisches Centralblatt, December, 1902.

the urine. Cases in which this can be effected but slightly or not at all are ones in which I do not hesitate to give a bad prognosis as regards the cure of the dermatosis. Even a moderate furunculosis or intertriginous eczema will prove intractable if the diabetes cannot be improved. The treatment of the skin lesions themselves must be carried out on the same principles as in non-diabetic affections of similar nature.

Eczema. Last year I noted the researches of Bender, Bockhardt, and Gerlach¹ on the etiology of eczema, which seemed to show that the toxins of the pus organisms were the effective agents. No authoritative work on the subject has appeared during the past year, and the question remains where I left it in that review. Interest has centred on the treatment, and more especially that of the obstinate infantile forms that frequently give us so much trouble. Huebel² has found that the withdrawal of salt from the diet has enabled him to cure some very obstinate cases. He ascertained that these children were being fed with milk from cows that were getting too much salt, and changed their source of food. It may be that attention to this point may be of use. Quillies³ maintains that this commonest of all infantile dermatoses is less common in artificially fed than in breast babies—a proposition that he would find it hard to maintain, though undoubtedly careful artificial is preferable to careless breast feeding. He rejects the parasitic theory of its etiology, and recognizes overfeeding, digestive disturbances, and faulty hygiene on the part of the mother or nurse (abuse of beer, wine, or coffee, psychic disturbances, etc.) as the chief element in its causation. There can be no doubt that there is some truth in his contention. The very first thing that I do with a case of infantile eczema is to carefully regulate the times of administration and the quantity of the food, laying special stress upon the importance of as slow ingestion as possible with frequent pauses.

A. Schwab⁴ also believes that these eczemas are a kind of auto-intoxication in overnourished infants. The mother or nurse should eat moderately and regularly, using a mixed diet, with not too much meat. No alcohol or coffee should be taken. Exercise and moderate work should be provided. Intervals of two hours at least should elapse between successive feedings, even at first, and two feedings only should be given at night. The pernicious habit of allowing the child to sleep at the breast or with the bottle should be stopped at once. After the third month feeding every three hours is quite sufficient. The child's

¹ PROGRESSIVE MEDICINE, September, 1902.

² Münchener med. Wochenschrift; Medical Standard, October, 1902.

³ Gazette Hebdomadaire; Dermatologisches Centralblatt, June, 1902.

⁴ Presse Médicale; Monatshefte f. praktische Dermatologie, November, 1902.

weight and its stools should be watched, and when undigested milk appears in the dejecta, or when there is frequent regurgitation, the food should be further limited or changed. Drugs are generally useless or even harmful. A little bicarbonate of soda or magnesia may be indicated, and occasionally some calomel or an enema is required for the bowels. The local treatment was fully gone into last year.

A general scheme for the treatment of this very common disease in adults may be useful, and I fully approve of that laid down by L. C. Michaelis.¹ In the first or erythematous stage no attempt should be made to cut the affection short. Soothing watery applications, liquor plumbi, or aluminum acetate solution, are appropriate. In the stage of exudation, powders, vegetable or mineral, should be used. Starch is the best basis for them all. Later on indifferent salves (Hebra's or Wilson's) are to be used; but Lassar's paste adheres better and, being porous, permits evaporation, and is sometimes preferable. In the chronic stage tar is indicated. Michaelis recommends ol. cadini pur., 10; zinc oxide, amyllum, ana, 25; vasel. flav., ad 100. I strongly recommend the substitution of lanolin (adepts lanæ) for the vaselin in this formula, with the addition of a little oil to counteract its tenacity. Many skins, especially inflamed ones, stand vaselin very badly, and as a general ointment base it is probably the worst that we possess.

Epidermolysis Bullosa. Two years ago I recorded a number of cases of this affection.² G. W. Wende³ has lately made an exhaustive study of the disease, and lays down the following as its characteristic features:

1. Hereditary or congenital formation of vesicles or blebs at points subjected to traumata or irritation.
2. Marked skin infiltration after the lesions subside.
3. Arrangement of the bullæ in concentric patches.
4. Decided changes in the nails.
5. Loss of hair on the scalp and absence of brows and lashes.
6. General tenuity of the skin.

Wende's case was an extensive one, the face and extremities being markedly affected. The scalp was almost bare, the brows and lashes practically absent, and there were no finger-nails. The skin in the vicinity of all the natural orifices was inflamed and eroded, and the hands, arms, knees, and feet were in a similar condition. Grouped bullæ were present in various parts of the body. Figs. 14 and 15 show the condition of the face and hands. The microscopic examination corresponded with the findings of Elliott, Blumer, and Colombini.

¹ Aertzliche Praxis; Monatshefte f. praktische Dermatologie, November 1, 1902.

² PROGRESSIVE MEDICINE, September, 1901.

³ Journal of Cutaneous and Genito-urinary Diseases, December, 1902.

FIG. 14.

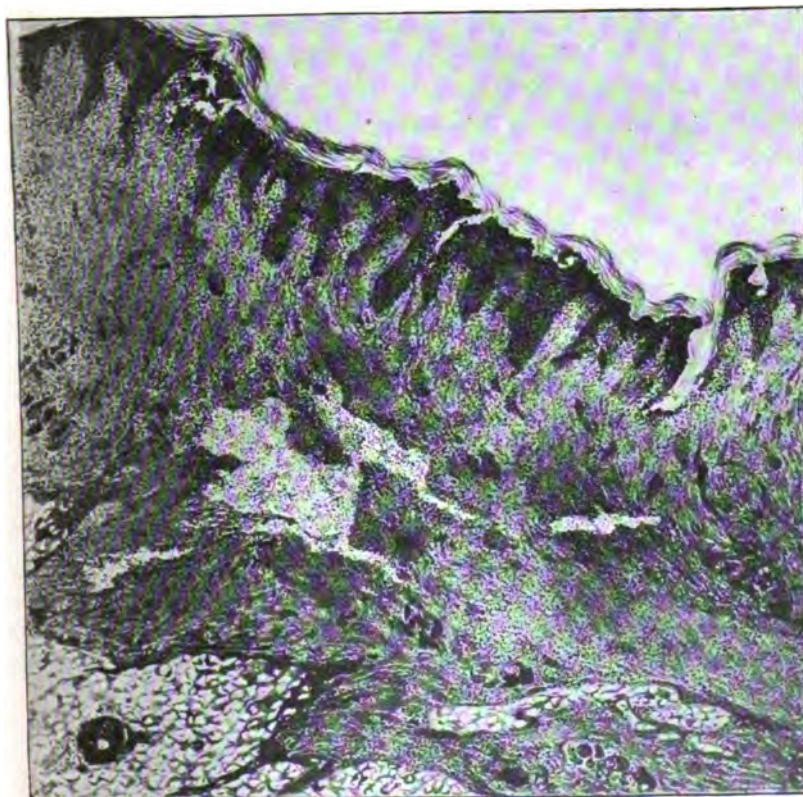
Bullous

FIG. 15.



Epidermolysis bullosa. (Wende's case.)

FIG. 16.



Epidermolysis bullosa. (Wende's case.)

The bullæ were found to be formed between the rête and the papillary layer. Bacteria were not found either in the tissues or the fluid of the blebs. (Fig. 16.)

The dystrophy of the hair and nails is a peculiar feature in this case, but similar secondary changes have been recorded by Hoffmann. The researches of Rona, Hallopeau, and Leredde have shown that there are two forms of epidermolysis bullosa. There is the simple bullous form, in which the blebs are the only symptom, and the dystrophic form, accompanied by atrophy of the skin, cyst formation, and nail and hair deformities.

Erysipelas. We are still without an authoritative treatise on the dermatoses of the negro race—a very promising field for investigation, though offering peculiar difficulties. Color occupies such a prominent place in the diagnosis of skin diseases that it is often extremely difficult to decide as to the nature of an affection in a deeply pigmented integument. I had personal experience of this fact when in charge of a clinic to which many negroes resorted. Stoops¹ says that in all the extensive erysipelas literature there is but a single case reported in a negro; yet it is not uncommon among them, though often masked and misinterpreted. The prevalent impression that they are immune to it is due to non-recognition and the patient's dread of hospitals. The clinical picture is wanting in the most characteristic feature of color, but there are fever, local swelling, and enlargement of the lymphatic glands. Blebs often occur early, and are very distinct, appearing as grayish-white patches on the dark skin. Desquamation is very prominent and noticeable.

The usual number of suggestions as to treatment have appeared. Krukenberg² has treated 18 attacks in 13 persons by the Finsen method of the "red room," the windows being glazed with red glass, and a photographic dark room light being employed at night. The duration of the fever was in 7 cases less than one day; in 1 case, one day; in 2 cases, one and one-half days; in 2 cases, two days; in 3 cases, two and one-half days; and in 1 case with intercurrent pneumonia, seven days. In all the cases the fever was but slight. He does not believe that the red rays have any curative effect, but they are the only ones that do no damage. The erysipelatous patch had usually lost its sharp edge after twelve hours' treatment. There was no vesiculation in any case.

The treatment has been used a good deal in variola. Its employment in erysipelas is comparatively new. The idea is that inflamed

¹ American Medicine; Medical Review of Reviews, May, 1902.

² Münchener med. Wochenschrift; Therapeutic Gazette, October 15, 1902.

skins are especially sensitive to the chemical rays, and that irritation is very much reduced by their exclusion. While red window panes can be used only in institutions, a red room can be readily improvised anywhere by the use of Turkey-red hangings and a dark room lamp. It seems to me quite possible that the undoubted good effects from ichthyol and similarly colored applications in this affection may be due to their light excluding properties. Krukenberg found that his patients did as well in a darkened room with a small red light.

Max Jerusalem¹ uses heat, applying rubber compresses that have been in boiling water over thick cloths. They require to be changed only every three to six hours. After an experience of sixty cases he claims that the treatment quiets pain, shortens the disease, and prevents relapses and suppuration. The abscesses so common with the liquor Buronii or alcohol treatment were entirely absent. He lost only one patient, a woman, aged sixty-six years, who died of gangrenous decubitus and hypostatic pneumonia.

Gill² reports the recovery of a severe case under the use of the anti-streptococcic serum. One case, in a disease that runs so varied a course, means nothing at all, and I expressed my opinion of its uselessness in this affection last year.

Hypomycetic Granuloma of the Skin. Under this title Schamberg³ describes a case of a type that is unusual, though I think it will be found to occur more frequently than is supposed. It was a fungoid affection of the skin in which the morphological resemblance to the ordinary ringworm parasite was marked, but as the parasite could not be identified by cultural tests the author has preferred the above designation. The patient was a female, aged forty years, and had the eruption for four weeks. It consisted of firm, elevated, discharging, dull red plaques on the forearm, beginning as pustules and gradually developing into the hypertrophic growths. A number of new ones grew rapidly under Schamberg's observation. (Fig. 17.) Removal of the crusts showed the whole surface to be covered with a granulomatous and fungoid growth. Partial excision was followed by local recurrence. Carbolic acid, tincture of iodine, ammoniated mercury, bichloride, etc., had no effect upon its extension.

Microscopic examination showed the hair to be normal, and staphylococci were the only micro-organisms that could be grown from the tumor on agar. Guinea-pig inoculations were negative. Sections of the skin showed great hypertrophy of the Malpighian layer and

¹ Wiener klin. therapeutische Wochenschrift; Dermatologisches Centralblatt, May, 1902.

² British Medical Journal; Monatshefte f. praktische Dermatologie, July 1, 1902.

³ Journal of Cutaneous and Genito-urinary Diseases, September, 1902.

numerous large abscess cavities, filled with polymorphonuclear leucocytes, in the rete. The entire corium was the seat of an extensive and closely packed cell infiltration. The fungus was found most abundantly in the advancing margin of the lesion; it consisted of mycelial threads scattered through the cell infiltration.

Deep trichophyton infection of the skin is commonest in the form of ringworm known as kerion and sycosis, and a number of writers have described other forms under various designations. Campana, Pellizzari, Pini, Sabouraud, Hartzell, and others have described granulomatous affections of the skin due to the trichophyton or allied parasites. Their diagnosis is of importance, since they are frequently papillomatous, and are then liable to be mistaken for tuberculosis cutis or blastomycetic dermatitis. Here is another argument, if one were needed, for the increased employment of the microscope in ordinary

FIG. 17.



Hypomycetic granuloma. (Schamberg's case.)

office work. To be fully equipped for dermatological diagnosis, a microscope and the necessary materials, together with a freezing microtome for the rapid preparation of sections, is required.

Schamberg's case refused curetting, but in spite of its recalcitrancy to the remedies above mentioned it got well under the use of a 1 : 4000 potassium permanganate solution.

Hair Dyes. This is a subject upon which we may be asked for advice, and which should not be left entirely to the barber. A good deal of damage may be and is occasionally done to the hair, the scalp, and even the system at large by the use of improper materials. One particular preparation much in vogue in Paris of late years occasioned many cases of a peculiar and obstinate dermatitis, the cause of which was long a matter of doubt. Information upon the subject will, therefore, not be out of place.

A good general survey of the subject is given by Schneider.¹ The materials commonly employed are of two classes:

1. *Mineral.* Compounds of lead, tin, silver, manganese, copper, iron, bismuth, and mercury are all used. Many of them are injurious, especially those that contain lead and mercury. Bismuth dyes are harmless, but they are difficult to prepare and do not give the deeper colors. The addition of sodium sulphite improves their effect. The silver salts are also harmless, and give deep, lasting colors. To prevent reflection when light strikes hair dyed with them, sulphate of copper must usually be added to them. Manganese dyes give a reddish tint. Copper is used only for dyeing dead hair. The iron salts are the most innocuous dyes of all, and give good tints from brown to black. They are best used in combination with a vegetable dye. The following is an excellent formula: Pyrogallol, 0.5; spirit vini gallici, 30; balsam of Peru, 1; liquor ferri acetatis, gtt. 4 to 10. Hydrogen dioxide is employed for bleaching the hair; a popular preparation contains: Hydrogen dioxide, 2000 parts; hydrochloric acid, 7 parts; sulphuric acid, 3.5 parts.

2. *Vegetable.* Of these India ink is the best; then comes the Persian dye "henna," orange and indigo combined, and the green walnut-shell dye. Different tints are obtained by varying the relative proportions of these. The shade depends on the length of time that it is applied; in two hours the hair is brown; in four to six hours it is black. The so-called Turkish hair dye is a mixture of Turkish galls and oil, with some iron and copper added. A common English proprietary dye is composed of India ink dissolved in rose-water. A good and safe vegetable dye is the following: Green walnut shells, 450 parts; powdered alum, 30 parts; rose-water, 120 parts. Mix in a mortar and dilute with thirty parts of 90 per cent. of alcohol.

Pyrogallol is, on the whole, the safest preparation to use, and will give almost any desired shade but black, in accordance with the concentration and the length of time that it is applied. I usually prefer to recommend a simpler formula without iron, thus: Pyrogallol, 1 part; cologne water, 2 parts; rose-water, 40 parts. For a black dye silver nitrate is the best: Argenti nitratis, 1 part; distilled water, 80 parts; ammonia-water, q. s. ad solutionem.

Keratosis. Localized excessive thickenings of the epidermis are, of course, very common as acquired lesions upon the hands, feet, buttocks, or any other part of the body subjected to steady but moderate pressure. They are the expression of the protective reaction of the tissues under repeated "insults," as the very appropriate German

¹ Dietetic and Hygienic Gazette; Medical Standard, November, 1902.

expression has it. The callosities upon the hands of workingmen are usually characteristic of their occupation; and the elder Hebra was in the habit of priding himself upon the success with which he could tell a man's handicraft from his callosities. As a congenital and hereditary deformity, related apparently to ichthyosis, the condition is very rare. It is usually hereditary, a number or all the members of the family and sometimes several generations, being affected. Buschke¹ reports a case in a female; some of the patient's sisters and brothers, as well as her mother and grandmother, also had it. Hans Vörner² has made a thorough study of the affection, based upon a number of cases of his own as well as the recorded ones of Unna, Beanier, Brooke, Bassaget, Pendred, Raff, Horton, and others. It affects certain members in each generation of a family, often but not always sparing the offspring of immune members. Its localization is always on the palms and soles, and usually nowhere else. Sweating is always greatly increased over the affected area, but nowhere else. There are no other objective disturbances such as are common in ichthyosis, and no subjective symptoms. The palms and soles, normal at birth, begin to show abnormal thickness of the corneous layer at their edges a few weeks later. When this is removed it exposes a bluish-red sensitive zone. The abnormal corneal thickening gradually spreads inward, until finally the entire thickness of the palms and soles is covered with a corneous mass $\frac{1}{2}$ to 1 cm. thick. In places these masses are fissured and irregular. During the first years partial desquamation occurs at irregular intervals, but later there is none. After the fifth year, at all events, the condition is a permanent one.

Vörner's cases were in four generations of one family with forty members; sixteen, or 40 per cent., were affected. In all cases the entire palms and soles were involved. The color of the keratomatous tissue in young individuals who were not working was yellow and semitransparent; in others it was a dirty gray, especially on parts that were exposed, as the ball of the thumb. Round the edges of the redundant tissue was a bright red border $\frac{1}{2}$ to 1 cm. broad. All the affected parts sweated very abundantly, and at the fissures the keratomatous tissue was soft and brittle. The deformities did not seem to interfere with these peoples' work; none of them wanted treatment. Sudden strains on the tissues, however, as on the soles in marching, caused deepening of the fissures into bloody rhagades. Tactile and thermic sensibility were in all cases unimpaired. There were no other integumentary lesions; the hair was natural. (Fig. 18.)

¹ Archiv f. Dermatologie und Syphiligraphie, February, 1901.

² Ibid., April, 1901.

The microscopic examination showed no trace of inflammatory oedema or nævoid change. The essential feature was an enormous hypertrophy of the epidermis without any qualitative change. All the layers of that tissue participated in the increase; thus, the stratum granulosum had twelve and the prickle-cell layer twenty-five or thirty rows of cells in places. It was a true "elephantiasis of the epidermis." This was the first careful microscopic study of the affection in twenty years.

FIG. 18.



Keratosis palmaris et plantaris hereditaria. (Vörner's case.)

Cases exactly similar to Vörner's have been recorded by M. Loewy¹ in father, uncle, grandmother, and three children having the affection. Böhm² states that cases very similar have been called localized ichthyosis by Kaposi, Lesser, and Joseph. He describes seven cases in three generations of one family. In the discussion of this case Joseph stated that he regarded them as instances of abortive intra-uterine ichthyosis. The localization and pre-eminently its marked heredity would seem to require a different designation. The point is not of much importance, though "keratosis hereditarium palmare et

¹ Dermatologisches Centralblatt, April, 1902.² Ibid., December, 1902.

plantare" is certainly a little cumbersome for ordinary use. Treatment save in a palliative way (softening and partial removal of the horny masses) is of no effect.

Keratoses similar to these hereditary ones occur occasionally, as Schütz¹ has shown, and that without any necessary relation to work. Most often there is excessive sweating, and the keratosis and hyperhidrosis get better and worse together. They have usually been recorded as cases of tylosis, or eczema keratoides, etc. The prognosis, while not so hopeless as in the hereditary cases, is bad. Salicylic acid preparations, resorcin, pyrogallol, lead, and 33 per cent. mercurial ointment occasionally do some good.

Kraurosis Ani. Kraurosis vulvæ, first described by Breisky, though a comparatively rare affection, has been recorded over sixty times, and Gordes and Pfannenstiel have seen it involve the anal region by extension, but C. L. Fitch's case² is the only one in which that region alone was affected. The malady is supposed to be in some way related to pruritus vulvæ, since intense itching is always a prodromal and concomitant symptom. Its pathogenesis is, however, by no means clear. The most probable idea is that it is a chronic inflammation of the skin, usually of the external genitals, caused by noxious chemical elements in the discharges. This chronic inflammation leads to atrophy of the deeper with coincident hypertrophy of the superficial tissues, for which double effect an analogy can be found in tuberculosis cutis. Fitch's case occurred in a Chinaman, aged fifty-five years, who had never had any venereal disease save a gonorrhœa that was cured years ago. The immediate history was unreliable. The patient said that the affection came on suddenly with burning and itching after a heavy wine dinner, yet inspection showed that the affection was a chronic one and had been present for a long time. There was an hypertrophied half-inch ring around the anus, most of the pigment of which had disappeared. It was of a dull, whitish color, mottled with a few dark spots. The itching was intense.

The diagnosis in advanced cases such as this presents no difficulties. Beginning cases cannot, however, be differentiated from simple pruritus unaccompanied by the tissue changes of kraurosis. Heller calls attention to the resemblance of these cases to scleroderma, which is at first an hypertrophic and then an atrophic process.

The prognosis as to life is good, but it is not so good as to the cure of the affection. Excision, when possible, has been successful in a number of cases. Fitch employed ichthyol and cocaine, with but slight

¹ Dermatologisches Centralblatt, April, 1902.

² Occidental Medical Times, December, 1902.

relief. Heller cured his case by cauterizing the affected area with formalin once a week, and using hot water and 50 per cent. aqueous ichthyol solutions between times. Hallowell praises a 5 per cent. oleate of mercury ointment.

Keloid. It is time that the terms "true" and "false" were abandoned in connection with this disease, since there is no such thing as a keloid that does not start from pre-existent cicatricial tissue. In many cases this is only the minute scar of an acne pustule or similar small lesion which has been overlooked. A distinction may be made, however, between the hypertrophic scar, in which the connective tissue overgrowth never exceeds the limits of the original lesion, and keloid itself, the growth of which is unlimited. This is the standpoint taken by Berliner,¹ with which I thoroughly agree.

Treatment is still the mooted point in this obstinate affection, though there is a tendency to be more hopeful than in the past. Goldmann² claims that it should no longer be regarded as a *noli me tangere*, and recommends extirpation followed immediately by Thiersch grafting. He claims to have obtained good results thereby. I have not tried it myself.

Thiosinamine, recommended by Sinclair Tousey and H. von Hebra, has, as I stated last year, given no results in my hands and in those of many others who have tried it. Scarification after Vidal's method and electrolysis have always disappointed me. The best results that I have obtained so far have been with actinotherapy (the Finsen method). I am treating some cases at the present time in that way, with undoubted shrinkage and flattening of the new-growth; but I have not yet entirely cured a single patch, and am, therefore, not prepared to make any positive statements upon the subject.

Leprosy. This subject was discussed at some length last year,³ but it is of abiding interest to us so long as authorities differ so greatly as they do regarding its prevalence and the prophylaxis and treatment that it requires. Thus Ashmead⁴ criticises the *Marine Hospital Report* upon the subject, which places the whole number of lepers in the United States at 278, and mostly in Louisiana and Minnesota. It is inaccurate, says the author, in many respects. Thus, the New Orleans *Picayune* states that there are 400 in Louisiana; the report gives only 155. One hundred have gone to Oregon from Japan, according to the emigration authorities of that country; they do not appear in the report

¹ Monatshefte f. praktische Dermatologie, April, 1902.

² Zeitschrift f. klin. Chirurgie, Band xxxi., No. 3; Monatshefte f. praktische Dermatologie, July, 1902.

³ PROGRESSIVE MEDICINE, December, 1902.

⁴ Pacific Medical Journal, September, 1902.

at all. Undoubtedly, as the author states, private cases are not reported, and there are probably at least 500 in the United States.

From Trondhjen, Norway, come the statistics of the leper settlement covering the period from 1860 to 1900, from the pen of A. Sand.¹ There were 1678 cases, 1080 male and 598 female; 1145 cases were tuberculous and 533 maculo-anæsthetic. The deaths were 1124—834 tuberculous and 289 maculo-anæsthetic. The chief causes of death were tuberculosis of the lungs and other organs and marasmus. The main duration of life was: males, tuberculous, 39.9 years; females, 37.8 years. Mean duration of the disease: males, 9.25; females, 10 years. Both forms of the disease appear oftenest at from the twentieth to the fortieth year. The preponderance of males over females is due, in Sand's opinion, to the fact that the latter come less in contact with the outer world, and are less liable to the infection. The statistics as

FIG. 19.



Lepros tuberosum. (Author's case.)

regards marriage are interesting. In 478 marriages of lepers with non-lepers there were only fifteen cases in which the other partner became infected. In 97 per cent. of all the cases there was no distinct history of infection, and Sand concludes very positively that leprosy is not, as a rule, transmitted by direct contact. No single case of infection has occurred in the institution in the forty years of its existence.

These statistics are significant, and findings such as those of Gravagna,² who detected the Hansen bacillus on the metallic money of a patient whose hands were covered with leprosy nodules, and did not find it on non-leprosy money, and draws far-reaching conclusions therefrom, are of small account. They fully justify the position taken by the New York Board of Health, which does not regard the affection as contagious at all in

¹ Leprosy, vol. iii., No. 1; Monatshefte f. praktische Dermatologie, December, 1902.

² Journal des Maladies Cutanées et Syphilitiques; Monatshefte f. praktische Dermatologie, April 15, 1902.

the ordinary sense of the term, and requires neither notification nor segregation. It would be well if other health authorities would follow New York's example.

One would think that a typical case of tuberculous leprosy could be diagnosed at a glance, yet that this is not always the case is illustrated by the instance shown in Fig. 19. I discovered this case accidentally, as it were. A medical health officer told me that he had casually seen a case of a peculiar tuberculous eruption of the face while making his rounds, and asked me to see it. It was a winter's night when I went there with him, but a glance in the dim lamplight of the tenement was sufficient. The patient was a robust Italian woman, who had been in this country for twelve years and had had the disease for ten of them. Her husband, at the time in Italy, had lived with her until within a few months, and was said to be healthy. Two daughters, aged about ten and fourteen years had lived with her in the small tenement room that she occupied, and were perfectly well. She had been under the care of two physicians for several years without the diagnosis being suspected. One of them, in fact, with whom I was acquainted, was greatly surprised when informed of it.

In this connection the paper by Shoemaker and Boston may be mentioned.¹ They call attention to the ease with which the diagnosis may be made from the blood in doubtful cases. Blood smears show the lepra bacilli in the leucocytes or free in the plasma. They are like the tubercle bacilli, or a little shorter. They have no spores, flagellæ, or motility. They stain well by Gram or Weigert, but they cannot be cultured or inoculated upon the lower animals. The culture reports of Bordoni-Uffreduzzi and Czaplewski are doubtful.

Montgomery² reports some unique cases of spontaneous cure of lepra. Of the seven leprous descendants of a missionary couple five are still living and have recovered after having shown leprous symptoms in the past. Figs. 20 and 21 show the anæsthetic area and clawed hand of one case.

Chaulmoogra oil is still the best remedy at our disposal, in Hallopeau's opinion.³ He showed a case as cured at the French Dermatological Society which had had tuberculous leprosy of the face and limbs. The dose of the remedy had been 200 to 300 drops a day, which the patient stood very well. He had been under Hallopeau's care only three months. Darier stated that he had also seen good results from the remedy. That there is no specific cure is the opinion of Mathias Hirschberg,⁴ writing from the Riga City Leprosary, where there is a

¹ Medical Bulletin, February, 1903.

² Medical Record, April 19, 1902.

³ Annales de Dermatologie et de Syphiligraphie, January, 1903.

⁴ Dermatologische Zeitschrift; Monatshefte f. praktische Dermatologie, September 15, 1902.

large amount of material. Oleum gynocardiae and Gurjun balsam may have some effect, but they have come to rely on general treatment almost entirely in the institution with which he is connected. Raynaud¹ uses the cacodylate of sodium, injecting five centigrammes daily hypodermically. His patients all improved in health and gained in weight. In four cases lepromatous ulcers healed. He does not regard the treatment as specific, but believes it to be useful.

FIG. 20.



FIG. 21



Lepra anæsthetica et mutilans. (Montgomery's case.)

The Hawaiian Board of Health announces that it intends to employ radiotherapy and actinotherapy in the treatment of the lepers in its charge.² Experimentation on a large scale in these directions is certainly desirable. Superficial tubercloses and malignant skin affections are successfully treated by these methods. The leprous lesions are chiefly in accessible situations, and the invading organism has feeble resisting powers, and it should be possible to destroy it. Sequiera has recorded some good results in the tuberculous variety of the disease.

¹ *Journal des Maladies Cutanées et Syphilitiques*; *British Journal of Dermatology*, October, 1902.

² *Journal of the American Medical Association*, July 26, 1902.

I used the Finsen treatment on the facial lesions of my case with marked results, so that the change was at once noticed when I exhibited her a second time in the Manhattan Dermatological Society of New York. There was distinct decrease in size of many of the tubercles, and a vigorous breaking down and ulceration took place on their surfaces. Unfortunately, the patient escaped my control after three months, returning to her home in Italy.

Rasing¹ lived for months in a hut in the Sandwich Islands studying and treating leprosy. As a result he has published a plan of treatment which, while it does not cure the disease, at least checks its progress. It consists of general cold baths, followed by baths of permanganate of potash solution or liquor calcis sulphurata, each followed by friction of the indurated surfaces. Abraded surfaces are treated with hydrogen peroxide, liquor arsenitis, or ichthyol, mercury, or chrysarobin ointments in varying strengths. The excretory organs are kept active, special attention being paid to the digestive tract. Internally he uses arsenic, ichthyol, the citrate of iron and ammonia with strychnine, sodium iodide, sodium salicylate, etc. He claims improvement after eight days. The skin becomes softer, sensation begins to return, and healthy granulations appear on the ulcerated surfaces. After one month the pain and œdema are largely gone, and extensive ulcerated surfaces are healed. Of course, this is merely an elaboration of the symptomatic treatment advocated by Hirschberg, and which is in vogue in many lepra institutions. We must be satisfied with it in the absence of a more direct and specific plan, but the search for this latter will never be abandoned.

This review can well be ended with a summary of the conclusions of H. P. Lie,² the medical superintendent of the Bergen Leper Hospital. He advocates the segregation of lepers, claiming that the disease has steadily diminished in Norway, thanks to the labors of Armauer Hansen in that direction. Thus the Molde Hospital no longer takes them in, and is put to other uses. The hereditary theory of Daniellsen and Boeck is entirely abandoned. Leprosy is recognized as contagious, of course, but I have elsewhere given my reasons for dissenting from the conclusions of this authority.

Lie is of opinion that the bacillus lepræ has a toxin like tuberculin, but that we cannot yet prepare it outside the body. The treatment that he advocates is entirely symptomatic. Morphine is given to relieve pain, with phenacetin, antipyrin, etc., as alternatives to prevent habit. Wet cups also relieve the pain. Baths and hygiene of the skin are important. If necrosis occurs surgical interference may be

¹ Medical Times, October, 1902.

² British Journal of Dermatology, October, 1902.

necessary, but patients do well with very defective fingers. Laryngeal stenosis often requires tracheotomy. The high operation should be done, as the patients often have to wear the tube for years. Iridectomy may be necessary, but the excision of corneal nodules is useless, as the whole tissue is almost always diseased.

Leucoplakia. This subject was considered two years ago. Since that time Butlin¹ has described four cases in which the vulvæ were affected. They were all in old women, and there were no symptoms from them until ulceration occurred. Microscopic examination of three of them revealed epitheliomatous degeneration. All were removed. The cases emphasize two points: In the first place, that leucoplakia, though commonest in the mouth, is not confined to that region of the body, and, as Perrin has shown,² it also occurs in the vulva, rectum, pharynx, middle ear, and larynx; in the second place, it would seem that in some locations, at all events, it is more likely to become carcinomatous than in the buccal cavity. In this latter Fournier placed the proportion of cancer at 30 per cent. Three out of Butlin's four cases were true epitheliomata, and the fourth one, which was precisely similar, was probably cancerous also, though it was not submitted to histological examination.

Bockhardt³ is very positive that tobacco is the essential etiological factor in the ordinary buccal form of the disease, and holds that treatment is absolutely hopeless if its use is not stopped. He has found the most efficacious treatment of the condition to be frequent gargling with a 1 to 3 per cent. salt solution. Balsam of Peru painted on the patches sometimes does good. He also recommends the employment of 50 per cent. lactic acid, as advocated by Joseph. This is a favorite treatment of my own, and I can recommend it very highly. Lieven⁴ favors mild alkaline washes, and warns against the use of caustics or irritant applications. In view of the great tendency to develop into epitheliomata that is shown by these plaques, and the well-established relationship of carcinoma and irritation, the warning is fully justified. To a great extent the lesions should be regarded as *noli me tangere* ones.

Shoemaker⁵ essentially agrees with the foregoing authorities. He calls attention to the difficulty in diagnosis that is often experienced in differentiating them from chronic glossitis, glassblowers' plaques, epithelioma, tuberculous ulceration, and syphilitic mucous patches. In their treatment the use of alcohol, tobacco, and hot or acid food must

¹ British Medical Journal; New England Medical Monthly, June, 1902.

² PROGRESSIVE MEDICINE, September, 1901.

³ Dermatologisches Centralblatt, June, 1902.

⁴ Medicinische Woch.; Monatshefte f. praktische Dermatologie, July 1, 1902.

⁵ New York Medical Journal; Monatshefte f. praktische Dermatologie, July 1, 1902.

be avoided; the teeth should be put in good condition and the mouth frequently cleansed with an antiseptic and alkaline gargle. Local applications should be made with a $\frac{1}{2}$ per cent. sublimate or a 1 per cent. chromic acid solution, or papain, 10 per cent., in distilled water and glycerin can be employed. If there are ulceration and fissures he advises operation. The tongue is to be decorticated after the method of Ransahoff, Trillat, and Verneuil. Syphilis, lithæmia, and other general condition must be appropriately treated.

Lupus Erythematosus. From an exhaustive study of 71 cases James H. Sequiera and H. Balean¹ attempt to obtain some clear idea of this rather puzzling disease. Their attention was especially directed to the following points:

1. Sex: The usual proportion is two-thirds female. In their cases there were 11 males and 60 females, being 86.4 per cent. and 15.4 per cent., respectively. The authors make no attempt to explain this unusual proportion.

2. Age: The oldest patient was fifty-eight, the youngest 11 years of age. Most of them were between the ages of sixteen and thirty.

3. Varieties: In 11 cases the disease occurred as multiple, small, disseminate foci; in the rest it assumed the usual form.

4. Tuberculosis in the family: There was a history of the disease in 34 cases, less than half.

5. Tuberculosis in the patient: There was evidence of it in 18 cases. There were tuberculous glands or their scars in 11 cases; tuberculous hip-joint disease in 1 case, and tuberculosis of the lungs in 8 cases. This is a proportion of 25 per cent. Roth found tuberculosis in 185 out of 250 collected cases; Boeck found it in 83 per cent.; Kopp in 18 out of 38 cases, and Veiel in 39 out of 119. The figures, therefore, vary greatly.

6. Tuberculosis in different varieties of erythematosus lupus: It was by far the most common in the disseminated form; 5 out of the 11 cases had it.

7. Presence of acroasphyxia, chilblains, etc.: Symptoms of this kind were present in 12 cases.

8. Connection with other (general) diseases: No evidence of anything of the kind was found in these cases.

9. Location: There were data obtainable in 47 cases of the site of onset of the disease. In 18 it was the cheeks; in 15, the nose; in 3, the eyelids; in 3, the ears; in 3, the scalp; in 2 cases the ears only were affected, and in 1 the region around the mouth alone; 1 case had it on the forehead and one cheek only.

¹ British Journal of Dermatology, October, 1902.

10. Influence of local irritation: In 1 case poultices for the relief of abdominal pain caused the appearance of a new crop of lupus erythematosus lesions; in another the Finsen treatment caused increase of the old and the appearance of new lesions; and in still another scratching had the same effect.

11. Condition of the kidneys: One case suffered from parenchymatous and another from interstitial nephritis.

I cannot say that these labors have been very productive, and the facts ascertained do not help us much. The reported bad result from actinotherapy is astonishing to me. I have had six cases of the kind, though

FIG. 22.



Mycosis fungoides. (Breakey's case.)

I have proper records of only four, and my results have been very satisfactory, indeed. Three of them were fairly recent, being of from six months to two years' standing. They were under five months', three months', and six weeks' treatment, respectively, getting twenty-two, nine, and twelve sessions. All three were cured. The fourth case was a very extensive one of many years' standing, which had been treated without effect by various specialists of different countries. The patient was a foreigner, and could stay here only one month. He had thirty-seven sessions, and was only slightly improved when he had to return to his home. The results in general were extremely encouraging, and I propose to

report them *in extenso* shortly. For the details of treatment, the reader is referred to the section on Actinotherapy, and to PROGRESSIVE MEDICINE for 1901 and 1902.

Mycosis Fungoides. The etiology of this affection as well as its relationship to sarcoma of the skin is still a matter of dispute. A very marked case is recorded by William W. Breakey.¹ The patient was a man, aged thirty-three years, who had been under observation for five years. Death occurred from exhaustion and pneumonia. The patho-

¹ Journal of Cutaneous and Genito-urinary Diseases, June, 1902.

logical diagnosis was sarcomatosis cutis. All the tumors were rounded or lymphosarcomatous under the microscope. No bacteria were found in the sections or cultures. (Fig. 22.) Both the photomicrographs and the description of the microscopic findings tally very closely with those of various forms of sarcoma of the skin, and I quite agree with Dr. Breakey when he says "it will be seen that the differential diagnosis of idiopathic multiple pigmented sarcoma of the skin and mycosis fungoides is neither easily nor certainly determined as yet by standards hitherto accepted as established." Jarisch, in the last edition of his text-book, classes mycosis fungoides as a "sarcoid" tumor. At the May meeting of the Manhattan Dermatological Society two cases almost precisely similar were shown by Pisko, one with the diagnosis of mycosis fungoides, and the other with that of sarcomatosis cutis. Hyde, in his study of the premycotic stage of the disease under consideration, states that he considers it sarcoma differing from the usual form in the frequent occurrence of spreading dermatoses.

The various means that are used in dermatology for closely related or imperfectly differentiated conditions present difficulties enough for the student in the specialty, and are very confusing to the practitioner, who cannot afford the time to learn them. I am coming more and more to the conclusion that it would be well to follow Kaposi's suggestion, and group mycosis fungoides, sarcomatosis cutis in all its forms, leukæmia cutis, and lymphoderma perniciosum, under a single heading. Kaposi calls them all "sarcoid," which is somewhat of a misnomer, since the group comprises true sarcoma of the skin as well as sarcoma-like tumors. I would suggest plain sarcoma cutis as comprehensive and understandable. When the specialists have settled all their differences of opinion, and have clearly classified and differentiated the various types, it will be time enough to give them specific names.

Nævus. A detailed account of the electrolytic method that he employs in the treatment of these growths is given by A. D. Rockwell.¹ The current must be just strong enough to stop the circulation in the tumor; less may permit the re-establishment of the redundant vascularization, and too strong a current may cause ulceration. One of two methods may be used. The first is the unipolar, with the positive needle or needles in the tumor and the negative electrode elsewhere, while in the second both the positive and the negative needles are in the tumor. Rockwell prefers the first method, for in the second the distance between the poles is so small that excessive action readily occurs. The needles may even touch and short circuit the current, which may not be detected if no milliamperemeter is employed. The

¹ Medical Critic, June, 1902.

first or unipolar method also gives a better clot. Personally, I never employ the polarity as recommended by Rockwell. It is true that coagulation occurs earlier, and the clot is firmer, with the positive electrode in the tumor; but the resultant disfigurement is greater on account of the deposition of metal in the tissues. It is better to take a little more time with the negative pole. I am also very decidedly of the opinion that the operation should never be undertaken without the interposition of a milliampèremeter in the current. Neither the patient's sensations nor the visible effect are adequate measures of the strength employed.

At the Breslau Dermatological Society, Sachs¹ showed casts, photographs, and slides of a case which is an exact replica of an unpublished one of my own. In both cases the raspberry-like masses filled one axilla, and there were lesions on the outer surface of the hand and on the little finger. The treatment employed in both cases was excision. These are examples of that peculiar variety of vascular overgrowth known as *nævus unius lateris*, to which Baerensprung first called attention, and which has been the subject of much investigation and dispute.

A rather remarkable case is that recorded by Riecke.² The patient was a female, aged forty-one years, who had only a flat birthmark on the face when born. It gradually increased in size until it occupied almost the entire left side of the face. It showed numerous warty protuberances, and formed a curtain over the mouth, lower lip, and chin. On the lip the growth was $6\frac{1}{2}$ cm. long, 2.4 cm. thick, and 10 cm. broad. The microscopic examination showed it to be a pure *hæmangioma*. There was no overgrowth of connective tissue, fat, etc.

Noma. Last year³ I called attention to the number of cases of this affection in which the diphtheria organism was the etiological agent, admitting, however, that in all probability there were a number of organisms that occasionally caused the gangrene. Sailer⁴ records two cases in point. In the first one, on the eighteenth day of a typhoid, a boy, aged fourteen years, developed noma of the cheek. Cultures from the mouth on agar gave *streptococcus pyogenes* and *staphylococcus albus*, but cultures from the blood on blood serum gave typical *Klebs-Loeffler bacilli* as well as other cocci. The boy had had diphtheria a year before. Antitoxin injections were useless, and death ensued. The second case was a sister of the first one, aged eight years. She developed noma and recovered. There were diphtheria bacilli in the mouth and subsequently in the otorrhœal fluid.

¹ *Archiv f. Dermatologie und Syphilis*, April, 1902.

² *Ibid.*, 1903, Nos. 2 and 3.

³ *PROGRESSIVE MEDICINE*, September, 1902.

⁴ *American Journal of the Medical Sciences*; *Monatshefte f. praktische Dermatologie*, July, 1902.

Similar were the findings of P. P. Korsch.¹ A female, aged six years, with typhoid, developed noma of the left cheek. Diphtheria bacilli and a few pus cocci were found. There was some improvement after antitoxin. The author calls attention to the similarity of these bacilli to the organisms found in stomacace by Bernheim, Guizetti, Paschill, and others.

On the other hand, several investigators have found other organisms. Trambusti² cultivated a bacillus from a case on bouillon, gelatin, and agar, which was pathogenic for dogs and rabbits when injected subcutaneously. Von Ranke³ records a case in which the mycelial organism discovered by Perthes and confirmed by Seiffert and others was apparently the active agent. This is probably the same leptothrix described by Blumer and MacFarlane.⁴

Matzenauer,⁵ in a general review of noma and nosocomial gangrene, concludes that hospital gangrene and noma are identical processes. Noma is merely a special localization of the disease. Hospital gangrene, phagedenic and diphtheritic ulceration, and noma are histologically and etiologically the same.

The entire matter rests about where it was last year. A certain number of these cases are probably due to the diphtheria bacillus, and when this is the case the antitoxin treatment may be tried.

Pruritus and Prurigo. The year has been prolific in articles upon this subject—a fairly good indication that there has been no very decided change or improvement in its treatment. Joseph⁶ reiterates his good reports on the use of bromocoll in the treatment of lichen simplex, urticaria, etc., and von Notthafft, Junius, and Arndt corroborate his statements. Lanz⁷ has had success with it in cases that had resisted other remedies for years. All these investigators used a 10 to 20 per cent. salve, but there is now a soluble form of the drug which Joseph recommends in all forms of the severest itching. It is best used in the following formula: Bromocoll soluble, 5, 10, or 20; zinc oxide, amylum, ana, 20; glycerin, 30; distilled water to 100. To be shaken, painted on, and allowed to dry. No bandage is used. Under the influence of the alkaline sweat bromine and tannin are set free and act in the nascent state.

¹ Bolnitch. *Gaz. Botkina*, 1902, No. 24; *Dermatologisches Centralblatt*, December, 1902.

² *Il Policlinico*; *Monatshefte f. praktische Dermatologie*, July 1, 1902.

³ *Münchener med. Wochenschrift*; *Journal of the American Medical Association*, February 7, 1903.

⁴ *PROGRESSIVE MEDICINE*, September, 1902, p. 186.

⁵ *Monatshefte f. praktische Dermatologie*, September 1, 1902.

⁶ *Dermatologisches Centralblatt*, April, 1902.

⁷ *Praktischeski Wratch*; *Dermatologisches Centralblatt*, June, 1902.

I give the above on account of the authorities that recommend it, and because of the eminent desirability of doing something for the relief of this very distressing symptom. In my hands I must confess that the drug has not been very successful, but, of course, I employed it in the severest cases only.

For *pruritus vulvæ* L. Seeligmann¹ recommends 10 per cent. guaiacolasogen. He claims to have found a diplococcus not unlike the gonococcus in all his cases, but which could readily be cultivated, and was stainable by Gram. It probably was the gonococcus in spite of its properties.

Andrews² calls attention to the efficacy of strong heat in stopping pruritus, whether neuropathic, from the toxins of microbes, or from parasites, etc. This property of heat is popularly known and employed in certain places; thus, Northern farmers and lumbermen use luminous heat for the cure of chilblains, putting the affected part as near the live coals as possible. Andrews advises the use of very hot water (130° F.) for localized pruritus. I have employed cloths soaked in water as hot as can possibly be borne in *pruritus ani* for many years, and have certainly obtained as much benefit from its application as from all the anti-pruritic drugs combined. A concentrated suprarenal extract solution was employed by F. S. Meara³ with success in two cases of pruritus ani et vulvæ. There was a momentary increase of the itching, and then relief for twelve hours. A second application gave permanent relief. Leredde⁴ has treated three cases of pruritus ani and one of pruritus ani et vulvæ with high frequency currents, and has entirely cured them all in seven to twelve sessions of from five to ten minutes each. None of these cases had gone on to lichenification, and Leredde admits that the treatment was not successful in cases where that had occurred.

In a typical case of *prurigo*, in which all treatment had failed for seven years, De Beurmann⁵ saw astonishing improvement, the skin becoming flexible and all discomfort disappearing under the daily and permanent application of the following salve: Camphor, 12; tar, 15; sulphur, 6; chaulmoogra oil, 3; vaselin, 62.

Among the curiosities of the affection under consideration is Egmont Baumgarten's cases of *pruritus linguae senilis*.⁶ There were no objective symptoms at all; only violent burning and itching. In one patient, aged sixty-eight years, it was violent enough to cause insomnia. No

¹ Deutsche med. Wochenschrift; Dermatologisches Centralblatt, April, 1902.

² Therapeutic Gazette, November 15, 1902.

³ Canada Medical Record, October, 1902.

⁴ Journal des Praticiens; Monatshefte f. praktische Dermatologie, July 15, 1902.

⁵ Annales de Dermatologie et de Syphiligraphie, July, 1902.

⁶ Orvosi Hetilap; Monatshefte f. praktische Dermatologie, July 15, 1902.

treatment did it the least good. Baumgarten claims that the affection is very rare. I have seen more than one case, and others in which the palate, nasal passages, etc., were the seat of the itching. I quite agree with the author as to the hopelessness of treatment.

Psoriasis. Two cases have been reported during the year in which the appearance of this disease was apparently determined by mental shock. Both were reported by competent observers, and, together with cases occurring after physical lesions of various kinds, are of importance on account of the pronounced position as to the parasitic nature of psoriasis that is held by Hallopeau and others.¹ Audry's² case occurred in a man, aged thirty years, who had never had any skin disease. After intense mental excitement he had an attack of itching, followed in a few days by a general nummular psoriasis. Balzer and Faure-Beaulieu's³ case was in a man, aged fifty-four years, who while walking with his children had one of them almost run over by a tram car; then he had an attack of nervous trembling, followed by chills and fever, and went home to bed. On the next day, when preparing to go to work, he noticed some red spots upon the left forearm. Two days later there were similar spots on the legs and trunk, and there finally developed a typical guttate psoriasis.

Mental shock as a cause of psoriasis was denied by Hebra, but has been admitted by many authorities, among whom I may mention Bateman, Neumann, Besnier, Leloir, Hentz, Brocq, Gaucher, Anderson, etc. The cases in point are few in number, but they have been carefully and accurately reported, and are valuable. Leloir cites the case of a priest who developed it after having been attacked by a mad dog; Brocq, that of a woman in whom it appeared after the nurse had overlain and killed her child; Hentz, after a fall from a horse in a cavalry charge, etc. In the discussion at the French Dermatological Society that followed Balzer and Faure-Beaulieu's report, Leredde denied that the appearance of psoriasis after mental shock showed a direct neurotic origin of the disease. It was due, in his estimation, to the indirect alteration of the skin and tissue fluids. Of course, this does not alter the position of mental emotion as an etiological factor in the disease. There can be no doubt of its existence in a small proportion of cases.

That local irritation may cause the development of a psoriasis is a well-known fact. There are other dermatoses of which the same is true. Thus in lichen planus, as well as in psoriasis, I have frequently

¹ PROGRESSIVE MEDICINE, September, 1902, p. 189.

² Arbeiten aus der Klinik f. Dermatologie und Syphilis zu Toulouse, 1899-1901; Monatshefte f. praktische Dermatologie, June 15, 1902.

³ Annales de Dermatologie et de Syphiligraphie, June, 1902.

caused the appearance of typical lesions in a line following a pin scratch or other local irritation. Bettmann¹ had a case of a man who had never had psoriasis, nor had it been in his family. Fourteen days after a tattooing typical lesions appeared on the forearm that had been operated on and spread over the body. An interesting feature in this case is the fact that the man had had his other arm tattooed three years before without any such effect, which Bettmann regards as an argument for the parasitic nature of the affection. I have seen several cases of psoriasis following vaccination, and am at a loss to understand Weinstein's claim of its rarity. He says that there are only twenty-four such cases in the literature.² His patient was a soldier, aged twenty-two years, in whom a typical psoriasis began at the vaccination site shortly after the operation and soon spread over the entire body.

The possible relationship of psoriasis and diabetes has been investigated by Piek,³ who finds that elementary glycosuria is rare in skin disease, and that there is no reason to suppose that it is dependent upon any anomaly of metabolism.

The occurrence of psoriatic lesions upon the palms and soles is very rare; in fact, the point is one of the chief ones upon which the differential diagnosis between the disease is question and a papulosquamous syphiloderm is made. Some undoubted cases have, however, been recorded. There is a question about the one that Milian⁴ showed at the French Dermatological Society. The hands had been affected for six months and the soles for two. Du Castel and Brocq thought the diagnosis of pityriasis rubra could not be excluded, and Fournier diagnosed syphilis. The exceptions are so few as to prove the rule, and we are quite safe in making a diagnosis of lues in a psoriasiform eruption in which the palms or soles are involved.

Both Chauneil⁵ and Morgenstern⁶ publish general plans for the treatment of this common affection, which are of interest as representing the French and the German methods. That of the former is as follows:

1. Reduce animal food; omit alcohol, strong cheese, etc.; exercise.
2. Internally, iodide of potash in large doses, 60 to 180 grains daily, well diluted; thyroid is dangerous.
3. Externally, remove scales by warm alkaline baths, soft soap, and brush; use ol. cadini, 3ij-3iiss; soft soap, q. s.; glycerole of starch,

¹ Münchener med. Wochenschrift; Monatshefte f. praktische Dermatologie, July 1, 1902.

² Wiener med. Wochenschrift, 1902, No. 4.

³ Berliner klin. Wochenschrift, 1902, No. 3.

⁴ Annales de Dermatologie et de Syphiligraphie, June, 1902.

⁵ Journal of the American Medical Association, February 7, 1902.

⁶ Therapie der Gegenwart; Monatshefte f. praktische Dermatologie, November 1, 1902.

3iss-3iij; ol. caryophylli, q. s. Pyrogallol and chrysarobin are to be used on small surfaces only, on account of the danger of absorption. Mercurials, naphthol, and salicylic acid are also useful. A very good combination is ichthyol, naphthol, and salicylic acid, each 3ss; vaselin, 3iij. Great stress is laid on the internal, dietetic, and hygienic treatment.

Morgenstern's scheme, on the other hand, is entirely composed of external remedies. He advises the selection of one of the following:

1. Warm baths of daily increasing temperature and length, with much soap, followed by acid. salicylic., 2; sulphur præcip., 10; zinci oxid., amyli, aa 10; vaselin flavi, 50.

2. Chrysarobin in traumaticin, or Neisser's chrysarobin paste: chrysarobin, zinci oxid., aa 5; amyli, lanolin anhydric, vaselin flavi, aa 7.5. This should be rubbed in once daily with a hard bristle brush for six days; then talcum powder or an indifferent salve used until the irritation subsides.

3. Hydrarg. præcip. alb., bismuth. subnit., aa 8; vaselin flavi, ad 100. This may be used in alternation with No. 2 or alone.

4. For rebellious patches, the chrysarobin plaster or the 10 to 20 per cent. salicylic soap plaster.

5. For very obstinate areas: hydracetic, 1.5 to 3; hydrarg. præcip. alb., bismuth. subnit., aa 3; ung. lenient., ad 30.

Radiotherapy. The amount of material that has been published during the past year on the Roentgen ray treatment as applied to dermatoses is so very great that its proper consideration is entirely beyond the scope of a review such as this. I shall, therefore, necessarily confine myself to the salient points of the chief papers that have come to my notice. The physiological and pathological action of the rays will be considered under the heading of Radiodermatitis.

Pusey,¹ Schultz,² Allen,³ Hopkins,⁴ Shields,⁵ Gaston and Vieira,⁶ A. E. Sterne,⁷ Woods,⁸ Sjögren and Sederholm,⁹ Coley,¹⁰ Gaston and

¹ Journal of Cutaneous and Genito-urinary Diseases, May, 1902; Journal of the American Medical Association, April 1, 1902.

² Archiv f. Dermatologie und Syphilis, March, 1902.

³ New York State Journal of Medicine, June, 1902.

⁴ Philadelphia Medical Journal, April 5, 1902.

⁵ Cincinnati Lancet-Clinic, July 12, 1902.

⁶ Annales de Dermatologie et de Syphiligraphie, June, 1902.

⁷ Indiana Medical Journal, August, 1902.

⁸ American Journal of the Medical Sciences; Monatshefte f. praktische Dermatologie, July 15, 1902.

Monatshefte f. praktische Dermatologie, October 1, 1902.

¹⁰ Journal of the American Medical Association, August 16, 1902.

Nicolau,¹ Heidingsfeld,² T. L. Butler,³ Zeisler,⁴ Grubbe,⁵ and many others have detailed the results that they have obtained.

Schultz finds that diseased skin reacts more quickly and intensively than the healthy integument, and this occurs not only in inflammatory affections like lupus, acne, sycosis, etc., but also in non-inflammatory ones like favus; hence a mild trial treatment should always be given first. Over two hundred patients have now been treated by the method in the Breslau clinic since February, 1897. His pathological investigations show that the cellular elements are chiefly or exclusively affected, undergoing slow degeneration, while connective and elastic tissue, muscle, and cartilage are not changed or only secondarily affected. The epithelium cells are most affected, then the cells of the glands and vessels. After cell degeneration has reached a certain point there is inflammatory reaction with vascular dilatation, serous imbibition of the tissues, and leucocytic emigration. In lupus these effects are seen in the degeneration of the giant and epithelioid cells and the secondary inflammation that follows.

The dermal affections in which radiotherapy has been employed are:

1. *Lupus Vulgaris*. Schultz has treated sixty-four cases with comparatively good effects, especially where the disease was very extensive. Sjögren and Sederholm had twenty-seven cases. All were improved, though no cures are recorded. Heidingsfeld reported cures to the Cincinnati Academy of Medicine on October 27th of last year. One case in which the cheek was affected was almost cured in two exposures, but neither he nor Zeisler, who had one case, is prepared to give a final judgment as to the efficacy of the procedure.

2. *Lupus Erythematosus*. Schultz records five cases and Sjögren and Sederholm six, with improvement or apparent cure followed by relapses. Woods reports a case in a female, aged thirty-two years, who had a half-dollar-sized plaque at the angle of the mouth. There was improvement after the second raying and cure after the sixth. Zeisler's single case was only improved.

3. *Acne and Rosacea*. There were no cures in Schultz's nine cases. The most that could be claimed was slight improvement. Zeisler reports thirty-four cases, with good results.

4. *Eczema*. Schultz's twelve cases were often favorably influenced as far as the itching was concerned, but there were no cures. Sjögren

¹ Annales de Dermatologie et de Syphiligraphie, August, 1902.

² Cincinnati Lancet-Clinic, December 6, 1902.

³ Louisville Journal of Medicine and Surgery, December, 1902.

⁴ Journal of the American Medical Association, February 21, 1903.

⁵ Ibid., January 19, 1903.

and Sederholm's ten cases of inveterate eczema were improved. Zeisler got good results in four cases.

5. *Psoriasis*. Schultz treated forty cases with marked results. Most of the patients were nearly and some were entirely cured. He considers the treatment to be better and more convenient than chrysarobin. Sjögren and Sederholm consider it useless. Zeisler records three cases as improved.

6. *Pruritus and Prurigo*. One case of pruritus vulvæ was improved, but there was no result in two cases of prurigo, according to Schultz. Sjögren and Sederholm were satisfied with the action of the ray in four cases of pruritus ani et vulvæ.

7. *Lichen*. Schultz had two cases of the chronic and one of the plain variety, which were treated without much result. Zeisler claims two cures of lichen planus.

8. *Parasitic Diseases, Ringworm, Favus, etc.* As many as fifty-two cases of these affections were treated by Schultz, with no cures. Good results, on the other hand, are reported by Gaston and Nicolau, and cures in four cases of syccosis by Zeisler.

9. *Keratoses, Verruca, etc.* Schultz, Sjögren and Sederholm, and Zeisler claim a number of cures.

10. *Nævus*. In this affection Schultz has no satisfactory results to record.

11. *Hypertrichosis*. In eleven cases treated by Sjögren and Sederholm the hair fell out under the treatment, but it soon returned again. Zeisler also had eleven cases, with results that he calls good, but nothing is said as to their permanency.

12. *Leprosy*. Two cases were treated by Schultz, with negative results. I have already recorded the striking change in the lepromata in the single case in which I used the Finsen treatment.

13. *Mycosis Fungoides*. Schultz has treated three cases in the premycotic stage. The rayed parts improved, but new nodules appeared.

14. *Carcinoma, Epithelioma, and Rodent Ulcer*. Many authorities have experimented with the rays in these affections. Schultz had seven cases, which he records as apparently cured. Hopkins is apparently satisfied with what he has accomplished in these cases. Shields has two cured cases. The first had an epithelioma of the cheek, $3 \times 2\frac{1}{2}$ c.cm. in size, and had twenty-five exposures; the other had one on the nose 1×1 c.cm., which required twenty-one sessions. Pusey claims for the treatment that it is painless, destroys diseased and leaves healthy tissue in its place, leaves small scars, often relieves pain, and can be employed in locations where other treatment could not. Sjögren and Sederholm and Zeisler claim good results. Allen

treated thirty-five cases, with fifteen cures, mostly in the superficial variety. Grubbe has reported a large number of cases, with results that were good in the majority, but that varied much with the location and extent of the disease. The average time of treatment was four months. He notes, however, that all the cures were not absolute, only symptomatic.

15. *Sarcoma.* Coley has experimented with radiotherapy in a number of cases, with results that cannot be said to be conclusive.

The authorities above cited are only a few of the many who have been using radiotherapy in the treatment of dermal affections during the past year, and their results, on the whole, have not been such as to enable us to regard the method as an established one in any special dermatosis. In lupus vulgaris and other cutaneous tubercules it certainly cannot compete with the Finsen treatment. In lupus erythematosus the reports are less favorable than are my own with actinotherapy. In acne rosacea, eczema, and psoriasis no more appears to have been accomplished than is done daily with older and simpler measures. The same holds good of pruritus, prurigo, and the parasitic dermatoses. There were no results in nævus and leprosy. In carcinoma, epithelioma, mycosis fungoides, and sarcoma a number of good results have been reported by competent observers, but they are certainly neither more numerous nor better than is obtained, for instance, with the caustic method. The conclusions that Coley comes to probably represent a conservative judgment on the matter. He finds that radiotherapy has a remarkable inhibitory action upon all varieties of malignant growths, so that it sometimes causes total disappearance of tumors by absorption without breaking down; that time only can decide whether the reported cures are permanent, and that it should be tried in all cases, but is specially suited to inoperable ones.

It cannot be left out of account, however, that the Roentgen ray is an agent whose action is uncertain and at times dangerous. I have drawn attention 'to this fact in last year's review' and discuss it more fully below.

Radiodermatitis. As the first and chief effect of the Roentgen treatment is manifested in the skin, and as dermatitis is the most frequent and prominent reaction, a brief consideration of the subject will be in place. A number of untoward results have been reported, and some have come under my own observation. O. Solomon² records a case of lupus in which the treatment, employed for lupus, caused extensive ulceration and a septic condition from which recovery was very

¹ PROGRESSIVE MEDICINE, September, 1902, p. 193.

² Archiv f. Dermatologie und Syphilis, May, 1902.

slow, indeed. A. E. Sterne¹ had a case of sarcoma of the cervical glands, in which after twelve X-ray sessions there was a notable diminution of the tumor, but the spleen kept on enlarging and the patient getting weaker. He died of general sepsis, due, Sterne thinks, to the absorption of the decomposed septic matter of the tumors. In the discussion on his paper E. H. Griswold stated that he had had a precisely similar result in a case of adenoma of the breast. Hallopeau and Gadaud² have each reported a case of scleroderma of the hands in X-ray workers. They were bad cases, going on to bone affection, ankylosis of the joints, and an arthropathy deformans. Heidingsfeld's case³ was a bullous radiodermatitis, though he prefers to designate it epidermolysis factitia.

Carl Beck⁴ has studied the lesions caused by prolonged exposure to the rays. The resultant inflammation has three stages. There is, first, hyperæmia, with infiltration of the cutis, rise in temperature, a small-scaled exfoliation, and marked itching. There is also falling of the hair and retrogressive changes in the differentiated elements of the skin, including the appendages, the glands, hair, and nails. A further stage is that in which blistering occurs, all the other symptoms being intensified. In the worst cases of all there is escharotic destruction of the tissues; they become brown-black and gangrenous. Suppurative exfoliation is very slow, and may take months. The author himself was apparently immune to the X-ray, but high tension currents finally caused a chronic erythema of his hands; they became leathery and of a terra-cotta color, and the epidermis exfoliated in scales. Perspiration ceased entirely, and in bad weather there was intense distress.

I have had a bad case of radiodermatitis under my care during the past winter. A year before I saw him the man had suffered a contusion of the outer part of his right hand. Apparently the injury was not serious, for it soon got well. For diagnostic purposes the surgeon to whom he applied made a radiograph, and as he is a very skilful X-ray operator the operation was certainly properly done. Some weeks after the single exposure a chronic inflammatory process began in the rayed tissue, and this had persisted in spite of the most varied treatment ever since. When he came to me there was a peculiar chronic inflammation of the entire outer part of the hand, involving the back and palm and the three outer fingers. The skin and subcutis were hardened and sclerotic; the two outer fingers were atrophied and contracted, and at their base was a deep, ulcerated sulcus. I had him in the hos-

¹ Indiana Medical Journal, August, 1902.

² Annales de Dermatologie et de Syphiligraphie, August, 1902.

³ Cincinnati Lancet-Clinic, December 6, 1902.

⁴ New York Medical Journal, May 24, 1902.

pital for months, but could make no impression at all on the inflammation. It got a little better and then a little worse. The ulceration deepened, until, finally, denuded bone was detected in its depths. The entire outer half of the hand had to be removed.

Cases such as these emphasize the fact that the X-ray is an uncertain agent, and sometimes a dangerous one. It should be used only by experienced operators, and it is not in place for trivial affections or such as can be successfully treated by other and safer methods.

Sarcoma Cutis. Either sarcomatous disease of the skin is on the increase or, what is more likely, it is becoming more generally differentiated and recognized. As is the case with other dermatoses, however, the "classification impetus," if I may call it such, has led to the estab-

FIG. 23.



Sarcoma cutis. (Author's case.)

lishment of a number of varieties, each decorated with a long name, to the confusion of the practitioner, whose opportunities for observing the disease are necessarily limited. It would be well to use the general term sarcoma cutis for all these affections.

I have recorded a very marked case of the disease¹ which was illustrated in last year's review.² The skin of the entire body was involved, and during the last few months sarcomatous nodules have appeared on the mucosa of the hard and soft palate and the nose. The general character of the skin lesions is shown in Fig. 23. Fatty involution of the older nodules is continuously taking place, so that there are numer-

¹ Journal of Cutaneous and Genito-urinary Diseases, September, 1902.

² PROGRESSIVE MEDICINE, September, 1902, p. 197.

ous depressed and pigmented areas on various parts of the patient's body; but new nodules appear continuously, and since the mucosæ are now involved it is probably only a short time before metastasis to the internal organs and the end comes.

Fig. 24 is a case recorded by David Lieberthal, of Chicago.¹ A careful microscopic study has led the author to the conclusion that there is no great distinction to be made between the various forms of the disease, more especially between the hemorrhagic sarcoma and

FIG. 24.



Sarcoma cutis. (Lieberthal's case.)

generalized sarcomatosis. In the discussion that ensued on the reading of Lieberthal's paper in the Section on Cutaneous Medicine of the American Medical Association last year, M. B. Hartzell took the position that the microscopic evidences were not sufficient to place all these dermal affections under the heading of sarcoma. In their clinical history they do not resemble the sarcoma of the surgeons at all. The fact is correct, but I dissent from Hartzell's deduction. Cancer presents

¹ Journal of the American Medical Association, December 6, 1902.

a precisely similar state of affairs. Rodent ulcer and superficial epithelioma run a very different course from glandular carcinoma, yet no one doubts their cancerous nature on that account. These tumors of the skin run a different course from similar lesions in the internal organs, but the malady is the same.

Pelagotti¹ records no less than seven cases of sarcomatosis cutis in his article, and Bernhardt² five. Pernet³ had a remarkable congenital case, not less than seventy-one tumors being present on the skin at birth. The child died on the third day, and, unfortunately, no autopsy was made. The microscopic examination showed the tumors to be composed of small round cells, with many vessels. There are only two other congenital cases on record—those of Philipps and von Ramdohr.

Reale⁴ has made inoculation attempts in a case in view of the blastomycetic theory of the nature of these cutaneous tumors, but always with negative results.

SYPHILIS.

Syphilis and Circumcision. Does circumcision lessen the susceptibility of the individual to the luetic contagion, and, if so, is the benefit sufficiently great to cause us to advocate preputial ablation as a general prophylactic measure? These have long been questions of great practical interest, on the one hand, to those interested in checking the ravages of one of the greatest scourges to which the human race is subject, and, on the other, to those who are interested in the preservation of the operation from sentimental grounds; for it must not be forgotten that the Jews form but an insignificant fraction of the several hundred millions of the world's inhabitants who practice circumcision as a religious rite. Prejudice has played so large a part in their discussion that an unbiased examination of the facts will be welcome.

My own impression, based on a not inconsiderable experience among people who practice ritual circumcision, is that infection with chancre is neither more nor less frequent than among the uncircumcised portion of the population. That syphilis and heredosyphilis is less frequently met with among the large immigrant population of the East Side in New York than among other similar people is due, I think, to the general practice of early marriage, the highly developed home life, and the comparatively elevated standard of sexual morality that characterizes

¹ Monatshefte f. praktische Dermatologie, September 15, 1902.

² Dermatologisches Centralblatt, February, 1903.

³ Archiv. de Dermatologie et de Syphiligraphie, January, 1903.

⁴ Monatshefte f. praktische Dermatologie, February 1, 1903.

them. In the younger generation, and more especially in that part of it which has abandoned the ancient customs and habits to a greater or less extent, syphilis is quite common. I have often had occasion to compare views with other practitioners in a position to judge of the matter, and as a general rule their opinions coincide with my own.

An opposing view is taken by many authorities, but usually based on evidence no better than my own. Thus H. N. Moyer¹ believes that general circumcision would diminish syphilis 50 to 75 per cent. The statistically proven most frequent site of the initial lesion and the reported infrequency of the affection among the Jews are the bases of his opinion. Neither are valid, in my opinion, and the great prevalence of such affections as locomotor ataxia and general paralysis among Jews, as shown by the statistics of the London insane asylums, is an argument on the opposing side.

An examination of the statistics of military and police forces in countries where Moslems and others serve together, the other social factors being much alike, should throw light upon the subject. Such has been made recently by Breitenstein² and by Bevell.³ The former examined the statistics of the Dutch East Indian army, composed of Europeans and Mohammedan Malays, and found the relative proportions of luetic infection to be 4.1 and 0.8 per cent. He claims that the social conditions are practically the same in the two classes of soldiers, which seems unlikely, since practically all the Europeans are young, unmarried men, while the natives are at home among their usual social surroundings. Bevell's statistics are of more importance. The police force of Bombay is composed of 1570 uncircumcised Hindoos and 523 circumcised Mohammedans. The proportion of married men in both classes is about the same, as are their morals. During the last nine years there have been 209 cases (13.32 per cent.) of primary syphilis among the Hindoos and 105 cases (20.08 per cent.) among the Moslems in the hospital. There was thus about 50 per cent. more primary syphilis among the circumcised than among those who had not been circumcised.

There is a fruitful field for investigation in this subject, which is of living interest both from a medical and from a sociological viewpoint. It should not be difficult to collect statistics sufficiently large to settle the matter, either from the native and European armies in the tropics or from the American and European cities where there is a large Hebrew population. The opinion seems to be growing, both in professional circles and among the laity, that circumcision is a desirable

¹ Archiv f. Dermatologie und Syphilis, December, 1901.

² Monatshefte f. praktische Dermatologie, February 1, 1903.

³ British Medical Journal; Monatshefte f. praktische Dermatologie, May 15, 1902.

prophylactic measure; and we are often asked for an opinion on the subject and sometimes have to decide whether it shall be done. The only definite advantage that I have been able to find is that of cleanliness. Among the lower classes the circumcised penis is usually clean, and the one provided with a prepuce usually the reverse; and, of course, in the former balanoposthitis is rare; but these advantages are not sufficient, in my opinion, to warrant our submitting all our male infants to a mutilating operation.

Diagnosis of Syphilis. This vital subject is one that, as a whole, is very inadequately treated in the text-books, yet it is incomparably more important than is that of treatment. The differences in the various forms of the latter are of little account compared with the necessity of accurate diagnosis. Any aid in that direction is, therefore, very desirable.

Max Schott¹ makes a suggestion that may prove useful in doubtful cases. He had a patient who presented only a penile sore, without any eruption or other secondary symptom. He broke off a portion of a tooth accidentally, however, and a typical mucous patch, clearing the diagnosis, appeared on the place on the tongue that was irritated by its sharp edges. Artificial cauterization caused other plaques to appear. He proposes the making of slight traumata of the mucosæ for diagnostic purposes. The only objections to his plan are that it is undesirable to start fresh infective foci into being, and that it may be difficult to get rid of them. But the pre-eminent importance of making a diagnosis as early as possible and the natural insistence of the patient about it would, I think, justify us in taking the risk.

Attention should be called to the possible importance of the pupillary signs as an aid to diagnosis in doubtful cases. Sulzer,² who claims to have been the first to discover it, states that there is a lack of associated action and that he found it in fourteen out of fifty-three cases. The reaction to light was weak or absent, while visual acuity and light perception were normal; hence the abnormality attracts no attention on the patient's part. G. Babinski and Charpentier³ announced some time ago that absence of pupil reflex to light, if permanent and unaccompanied by any changes in the optic nerve or eyeball or paralysis of the third pair, was almost pathognomonic of hereditary or acquired syphilis. Further investigation has shown them that this symptom may be the only sign of an organic specific nervous affection. It is of great importance, as it allows the diagnosis to be made and treatment begun in the incipient stages of these affections.

¹ Philadelphia Medical Journal, May, 1902.

² Journal of the American Medical Association, May 4, 1902.

³ Bulletin de la Société des Hôpitaux de Paris, May 23, 1901.

Williamson¹ calls attention to the well-known difficulties in the diagnosis of syphilis in women. The appearance of the chancre is greatly modified by the tissue in which it appears. On the cervix it may look like an ordinary erosion, and the cervical tissue is often so dense that induration cannot be appreciated at all. In the labia or vaginal wall the initial lesion may be only an insignificant nodule or superficial erosion. The secondary symptoms also are different to some extent from those of the male, and give rise to error. The alopecia, angina, and roseola are usually very slightly marked, and as the sex is naturally lymphatic too much stress cannot be laid on enlarged glands.

Being naturally less well informed than the male portion of the community on the subject of "blood poison," and, of course, infinitely less frequently knowingly exposed, and with symptoms so often slight that they are very liable to be misinterpreted or overlooked, it is little wonder that we can get no history in so many females undoubtedly suffering from luetic disease; and this is entirely apart from voluntary concealment of the facts, the incentive to which is usually much greater than with the other sex. As a matter of fact, the history is of little value in any case of syphilis, being as liable to mislead as to give information of value, and in females it is absolutely worthless. A diagnosis in every case must be made on the symptoms alone. This is a point that others as well as I have long insisted on. The history may be accepted as confirmatory or the reverse of a decision that is already made, but it must not be allowed to play a decisive part in the diagnosis.

It is the common opinion that the presence of itching is an important element in the differential diagnosis between syphilis and *eczema*; and, as a rule, this is true. Yet the usual impression that because a lesion itches it cannot be syphilitic, and if it does not itch it cannot be eczematous, is not founded on fact. In the first place, pruritus is a subjective symptom, and as such must be accepted with hesitation. Some patients will complain bitterly of itching, and yet there will not be a scratch mark on the skin. It is safe to pay but little attention to the symptom when the marks of the patient's finger-nails do not give objective support to his statements. In the next place, there are eczematous eruptions that itch very little or not at all, and there are true syphilodermata that are accompanied by marked pruritus. Hallopeau and Trastour² record three new cases that are examples of the latter abnormality. They had shown one to the French Dermatological Society some time before. Of the three new cases two were general eruptions of the small papular type, which Fournier long ago

¹ Medical Age, January 10, 1903.

² Annales de Dermatologie et de Syphiligraphie, October, 1902.

noted as being sometimes pruritic. The third was a larger papular form.

Schamberg,¹ in a paper read at the Fifty-third Meeting of the American Medical Association at Saratoga, called renewed attention to the difficulties that often confront us in the differential diagnosis of syphilis and smallpox. This will be fully appreciated by anyone who has occasion to see many cases of either disease. The differentiation is especially hard in the colored race; and during a variola epidemic some years ago in New York, when I was working in a dispensary much frequented by negroes, I saw several cases in which it was quite impossible for me to make up my mind. Not only are the physical features of the general pustular syphiloderm indistinguishable from those of variola in a certain stage, but the pyrexia and other signs may be quite alike. The only safe thing to do with these cases is to isolate them as "suspicious," and await developments. Twenty-four or forty-eight hours will enable us to decide whether the lesions are undergoing the evolution of variola pustules or maintaining the comparative quiescence of syphilitic lesions.

Abnormalities in the regular course of the luetic disease are factors that may also complicate the diagnosis and render it uncertain. Thus, a prolonged period of secondary incubation between the chancre and the general symptoms may leave us in doubt as to the nature of the disease. Napp² records one of forty-seven weeks or 328 days. This, he claims, is the longest secondary incubation on record, Ausspitz and Bergh's statistics giving 159 and 204 days, respectively, as the most extended. Napp's was 124 days longer than the last. I have recently had a similar case under my care. The patient was sent to me for consultation on August 22, 1902. He had as typical an eroded chancre of the sheath as I have ever seen, which had been present for six weeks, or since the beginning of July. There was marked local adenopathy, but no other specific symptoms. The impossibility of making an absolute diagnosis was explained, yet the tumor was certainly neither a chancroid nor a gumma, nor any other lesion that I could think of. The patient desired excision, though I laid the facts as regards that operation plainly before him. It was done on August 26th. The wound healed normally, with a scar that has remained soft. He has been under the fairly continuous observation of his physician, Dr. Girsdansky, ever since, and I have seen him eight times, the last being on April 3, 1903. I have arranged to see him at once if the least suspicious symptom occurs, but there has been

¹ Journal of the American Medical Association, November 29, 1902.

² Annales de Dermatologie et de Syphiligraphie, September, 1902.

no sign of general infection up to the date of this present writing, June 10th. This is now eleven months, or 330 days—a period equal to that of Napp's case. It can, of course, be claimed that the diagnosis of the original lesion must remain a matter of doubt until secondary symptoms do appear; but, practically, those of us who are experienced in such cases feel that we can be positive in typical cases, and I am sure that the patient had an initial lesion and nothing else. Although the subject of chancre excision is considered settled, and the operation has been abandoned, I certainly feel encouraged to try it again in cases where the tumor is so situated as to render ablation easy.

Duration of the Contagion. This is a point of the greatest practical importance, yet the statements in the text-books regarding it are by no means clear and definite. When do the late lesions, the moist papules or mucous patches, cease to be dangerous?

My own practice has been as follows: If the patient has had thorough and efficient treatment for three years, and has remained for one year after that free from all signs of the disease, I consider him cured and permit him to marry. Yet no less an authority than Fournier, in conjunction with Herscher,¹ has reported a case of a female, aged thirty-four years, who acquired syphilis from her lover, who had been treated for syphilis by Fournier himself thirteen years before. Fournier regards this as an undoubted case, and in the discussion on the subject that ensued in the French Dermatological Society Mauriac recounted a case that transmitted the disease nine years after the infection.

These are authoritative observers, and there can be no doubt that there are cases in which infective lesions persist for very much longer periods than is generally supposed; but their extreme rarity is itself proof of the correctness of the general position that I take. Our business is with the general run of cases and not with the rare exceptions. We are surrounded by multitudes of people who have had syphilis in the past, and who are cured inasmuch as they neither show signs of it themselves nor transmit it to others. Nevertheless, cases such as these here noted teach us that it is impossible to promise absolute immunity to wife or offspring in any case that has been infected. In giving a prognosis as to the future, and in granting permission to marry, mention should be made of the exceptional cases, so that the physician is safeguarded.

I may note in this connection that some syphilographers deem it necessary to take a more guarded position. Thus, Dubois-Havenith²

¹ *Annales de Dermatologie et de Syphiligraphie*, October, 1902.

² *Presse Médicale Belge; Monatshefte f. praktische Dermatologie*, June 15, 1902.

gives no health certificate, no matter how long the time since infection or what cures the patient has gone through. Lydston and Morton¹ advise that explicit consent to marriage should never be given. Horwitz agrees with me, and so do Keyes and Duhring, but the former requires five years as the period that must elapse.

Instructions for Syphilitics. It is a somewhat difficult and tedious task to instruct our syphilitics in what they should know of the nature of their disease for the protection of themselves and their surroundings, and in public practice it becomes an impossibility. The dispensary of the Presbyterian Hospital of this city gives each infected patient a printed card, as follows :

Instructions to those suffering from syphilis.

Syphilis is a constitutional disease ; it is in the blood. Local remedies and taking medicine for a few months will not cure you. You must be treated for three years.

The effects of the disease are far-reaching, and if treatment is neglected much trouble and suffering may be caused not only to yourself, but to others.

The following rules must be observed during the first year :

1. Sexual intercourse should not be indulged in.
2. Alcohol in all forms should be avoided, as it always aggravates the disease.
3. Do not smoke or chew tobacco.
4. Sleep alone.
5. Under no circumstances should anyone be allowed to use your toilet articles, such as towels, brushes, combs, razors, shaving-brushes, etc.
6. No article that has been in your mouth should be used by others, as tooth-brushes, toothpicks, pencils, pipes, cigars, cigarettes, forks, spoons, drinking-cups, etc.
7. You must not kiss anyone, especially children.
8. Brush your teeth night and morning, and keep your mouth clean.
9. If you have bad teeth have them attended to by a dentist, but be sure to tell him that you have syphilis, so that he can take the necessary precautions and avoid the possibility of infecting others (and himself).
10. Acids in the food and drink should be limited.

I reproduce these instructions as suggestive of the matter that a card of this kind should contain. It can doubtless be added to and improved upon.

The Syphilis Organism. This microbe ought to be found if persistent search could do it. Von Neissen, to whose reported discovery

¹ International Medical Magazine ; Monatshefte f. praktische Dermatologie, June 15, 1902.

attention was called in the last two September issues of *PROGRESSIVE MEDICINE*, records twenty more cases in which he cultured his micro-organism from syphilitic blood.¹ He describes with elaboration his method of isolating and cultivating the bacillus. Altogether he has now demonstrated the organism in seventy-two human beings and three animals (two pigs and one ape.) The trouble with his experiments is that the signs that he regards as syphilitic are not such as would be accepted by others as indubitable evidences of the disease. An indefinite erythema, which might occur after the injection of various organic substance or from gastric disturbances, and injection of the conjunctiva and sclera cannot be regarded as pathognomonic signs of luetic disease.

Joseph and Piorkowski² also claim to have discovered the organism. Since the virus can be transmitted by conception to the mother as well as the foetus, the active agent must be in the semen. They, therefore, made cultures from fresh sperma on healthy placenta, and in twenty-two cases they got a bacillus which they propagated in several generations, without attenuation, on various media. The organism was a short rod with rounded ends, and it showed a palisade-like arrangement in the cultures. It was readily stained by carbol-fuchsin and gentian violet, and reacted positively to Gram. It was not stainable with methylene blue. Old syphilitic semen (three to five years post-infectum) and healthy secretion gave only ordinary staphylococci to similar inoculations. Animal inoculations with their microbe has been so far unsuccessful. The authors themselves admit that their experiments are inconclusive.

Paulsen³ found a bacillus in the blood of a roseola and an inguinal gland in one case, which he cultivated on pig's blood serum. It was similar to the diphtheria bacillus. It is significant that at the Hamburg Medical Society, where the paper was read, it elicited no discussion save that Delbanco said that the organism evidently belonged to the great class of pseudodiphtheria bacilli. Ruge⁴ suggests that a protozoon similar to that of malaria may be the cause of the disease, taking years instead of weeks for its life cycle. H. Vincent⁵ has studied the secretion from two cases of tonsillar ulceration and seven mucous patches. He found various streptococci and staphylococci, and a few fusiform and coliform bacilli, but not the organisms described by von Neissen and others.

¹ Beiträge zur Syphilis Forschung, 1902, Nos. 6 and 7.

² Berliner klinische Wochenschrift, March 24 and 31, 1902.

³ Münchener medicinische Wochenschrift; Dermatologisches Centralblatt, July, 1902.

⁴ Centralblatt f. Bakteriologie; Journal of the American Medical Association, February 14, 1903.

⁵ Presse Médicale; Monatshefte f. praktische Dermatologie, September 1, 1902.

The claims made by various authors as to the inoculability of pigs with syphilis have been examined by Stanziale.¹ He got no reaction at first, but two days later (incubation) a granuloma made its appearance at the inoculated site, which was found to contain many giant cells and to be in a condition of beginning necrosis. In rabbits there appeared multiple lymphomata, changes in the liver and kidneys, and marasmus; but he never succeeded in getting any true syphilis.

We are, therefore, compelled to admit that no advance has been made during the past year as regards the discovery of the cause of the disease.

Sequelæ of Syphilis. Matheo² says that our ideas concerning the frequency and nature of the sequelæ of constitutional syphilis are largely erroneous, being based on old and defective data. He collates 568 cases in which the symptoms of secondary syphilis have been reliably established, and 130 others with similarly positive tertiary manifestations. Of these 114 of the secondary and 46 of the tertiary had died, and had had autopsies. In 6 there was no satisfactory explanation of the deaths obtained from the post-mortem examinations; 36 of the secondary and 7 of the tertiary cases died of tuberculosis. This is not astonishing, in view of the frequency of this latter disease in Germany; but the ages of these patients were less than those of the general tuberculosis mortality, and Matheo concludes that syphilis shortens the course of the tuberculous disease.

Twenty secondary and 11 tertiary cases died of disease of the circulatory system; 10 secondary and 8 tertiary died of apoplexy, and all of these but 8 were under fifty years of age at the time of death. Four secondary and 1 tertiary committed suicide. Carcinoma killed 1 secondary and 1 tertiary case. One secondary and 2 tertiary only died of tabes; 5 secondary and 2 tertiary died of paralytic dementia. The remainder died of various non-significant pathological conditions.

Matheo next considers the duration of life in the entire number of syphilitics whose histories were accessible. There were 568 secondary and 130 tertiary cases; there were autopsies in 114 of the former and 46 of the latter. His list is as follows:

	Secondary.	Tertiary.
Tuberculosis	36	7 cases.
Circulatory disease	20	11 "
Apoplexy	10	8 "
Suicide	4	1 "
Cancer	1	1 "
Tabes.	1	2 "
Dementia	5	2 "

No explanation of death, 36.

¹ *Giornale italiano delle malattie veneree e delle pelle*; Monatshefte f. praktische Dermatologie, February 1, 1903.

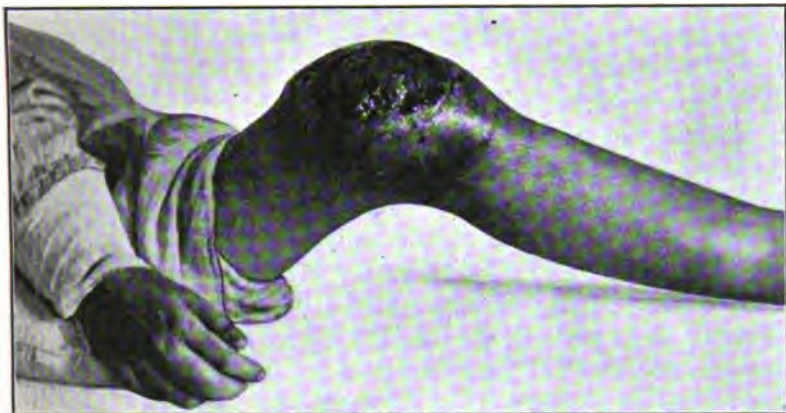
² *Münchener medicinische Wochenschrift*, 1902.

Compared with the standard mortality this shows that syphilis somewhat shortens life, but not by any means to the extent that is usually supposed. Our life insurance companies take a different view of the matter, and the more conservative of them absolutely refuse to take syphilitic risks.

As regards the frequency of tertiary sequelæ, C. Epstein¹ found 133 cases of late skin syphilis in 1310 of Nuremburg cases.

Fick² has examined the records of cases in Ehrmann's Vienna clinic, and has found that half their number (46 out of 96) had had no anti-luetic treatment at all; that 7 had had insufficient treatment, and that only 22 had had what could be regarded as a satisfactory course. As to the time after infection at which the tertiary manifestations showed themselves, the figures were: one year, 7; two, 2; three, 2; four, 2;

FIG. 25.



Ulcerative gummata. (Author's case.)

five, 3; six, 4; seven, 5; eight, 3; nine, 1; ten, 6; eleven, 2; twelve, 1; thirteen, 1; fourteen, 2; fifteen, 1; eighteen, 2; twenty, 1; twenty-one, 1; twenty-two, 1; twenty-four, 2; twenty-five, 2; twenty-seven, 1; twenty-eight, 2; thirty, 3; thirty-six, 1. The localization of the tertiary lesions was: skin, 47 cases; bones and periosteum, 14; mucosa of nose and throat, 14; sarcocoele, 11; nervous system, 7; muscles, 3; glands, 2; liver and spleen, 2. All authorities—von Marschalko, Grön, Fournier, and others—find that the skin is by far the most frequent seat of these late syphilitic manifestations.

While the sequelæ of syphilis are less severe and serious now than

¹ Festschrift zur Feier des 50-Jährigen Bestehens des ärztlichen Vereins Nürnberg; Monatshefte f. praktische Dermatologie, June 15, 1902.

² Archiv f. Dermatologie und Syphilis, January, 1903.

they were formerly, probably on account of the more extended and thorough treatment that the cases now generally receive, we do occasionally see malignant and rapidly fatal cases. The accompanying illustration (Fig. 25) shows one of numerous exulcerated gummata in one of these cases in my service at the Lebanon Hospital. No treatment seemed to make any impression on the case at all, and when the patient, for personal reasons, was removed from the hospital, his condition was worse than when he entered it. The prognosis in these malignant cases is unfortunately very bad.

Treatment of Syphilis. Syphilographers the world over are more and more earnestly advocating the injection treatment, and abandoning the inunctions that have been the favorite method so long upon the Continent of Europe. Thus Leredde¹ publishes the following theses:

1. All severe forms of syphilis must be exclusively treated by injections. They are the only means of introducing definite amounts of mercury into the system, as he has elsewhere proved. One centigramme (one-seventh of a grain) of calomel injected weekly is more powerful than the same amount of the protoiodide ingested daily, or 6 grammes (5iss) of gray ointment inuncted every day.

2. Whether soluble or insoluble salts are injected, or the precise combination employed, is not of great importance. The essential point is the quantity of mercury that reaches the circulation. The amount of mercury in the various salts is: calomel, Hg_2Cl_2 , 84.92 per cent.; sublimate, HgCl_2 , 73.80 per cent.; yellow iodide, Hg_2I_2 , 61.16 per cent.; red biniodide, HgI_2 , 44.05 per cent.; benzoate ($\text{C}_6\text{H}_5\text{Co}_2$), 45.25 per cent.; cyanide, Cn_{22}Hg , 79.32 per cent.

The soluble salts, sublimate and the cyanide, contain almost twice as much mercury as the benzoate and biniodide; calomel contains most of all, and in Leredde's opinion is the most effective of the salts, giving results obtained from no other. The fever or reaction that sometimes accompanies its use is due to the fact that in the first three days three-fourths of the calomel is dissolved, and 0.1 calomel equals 9.98 of metallic mercury. Oleum cinereum causes no local or general reaction; it is slowly absorbed, and stomatitis, if it occurs, appears three weeks after the injection. The author denies all cumulative action to the mercury; the amount absorbed in the first twenty-four hours is decisive. The apparent superiority of the insoluble salts depends on the greater quantities used.

Leredde also makes a plea for the administration of much larger doses of mercury than are generally employed. Stomatitis is to be avoided, of course, but its occurrence depends largely upon the care

¹ Monatshefte f. praktische Dermatologie, September 1, 1902.

that is given to the mouth. Large doses are specially advocated : (a) in diagnosis cases ; (b) when ordinary doses are not effective, and (c) in urgent cases, when threatening symptoms must be rapidly cured. In the parasyphilitic nervous diseases, as tabes or progressive paralysis, very large doses must be used. Many authorities believe these affections to be syphilitic, and at the recent Toulouse Congress Lemoine, Cassaet, and others reported further cures of these affections with mercury.

Tommasoli¹ also energetically advocates an early and intense injection treatment. He considers at length the objections that have been urged against it, and effectually disposes of them. My experience is entirely in accord with his. Local painful nodosities, phlebitis, blood effusions, erythemas, etc., are of extremely rare occurrence when a proper method is employed. Mouth affections, pyalism, etc., are if anything less frequent than in other methods of administration, and its many advantages entirely offset these occasional accidents.

Von Düring² has had charge of the campaign against syphilis in Asia Minor instituted by the Sultan, and has had unusual opportunities for observing the disease and the effects of treatment upon it. He uses the salicylate of mercury for hypodermic injection, and with his aids has given over 100,000 injections in the last six years. He has had embolism but twice in this vast number of cases, and in both cases the trouble subsided spontaneously in twenty-four hours. Among the other noteworthy results of his investigations is the fact that he found scarcely a single case of tabes among the many thousands of syphilitics in Asia Minor and Bosnia. Von Düring employs the salicylate in the manner that I have long advocated. He gives two weekly injections of from 0.08 to 0.1 gramme (1.2 to 1.5 grains) in courses dependent upon the nature and persistence of the symptoms for their extent and frequency. This intermittent continuous treatment is kept up for two or three years. The lactate of mercury is the salt preferred by Gaucher,³ both for injection and for oral treatment. It is made by dissolving the red oxide in a 10 per cent. lactic acid solution. He claims that it is stable, effective, and hardly irritates at all. One centigramme (one-seventh of a grain) daily is an ample subcutaneous dose.

Civatte and Fraisse⁴ claim that in some cases mercury combined with arsenic is effective where the former alone is not. The preparation that they employ is a combination of cacodylic acid and mercury, the "cacodylate iodohydrargyrique." Their cases are still too few, however, for us to pass judgment on the new preparation.

¹ *Annales de Dermatologie et de Syphiligraphie*, December, 1902.

² *Münchener medicinische Wochenschrift*, September 16, 1902.

³ *Bulletin des Hôpitaux de Paris*, March 6 and 20, 1902.

⁴ *Gazette des Hôpitaux*, 1902, No. 75.

For severe and rebellious cases Renault¹ injects the cyanide of mercury, and recounts fourteen intractable cases in which it was effective. He injects into a vein of the forearm 1 centigramme (one-seventh of a grain) of a 1 per cent. solution every day or every other day. He claims that the injection is not painful, and that there is no exudation, perivascular inflammation, or any other trouble. Lichatscheff² has employed the sublimate intravenously in seventeen female cases, using a 1:1000 or 1:500 solution. It is safe except in cases with marked arteriosclerosis, acts more rapidly than subcutaneous medication, does not irritate the intestines or stomach, and can be used where stomatitis already exists.

I do not think that any of these attempts to introduce the intravenous as a regular method of treating the disease will meet with any success. It is entirely too troublesome, and the practitioner will reject a method that has special dangers of its own, that requires special care, and that presents no advantages over intramuscular medication. Desmou's³ is entirely of this opinion, and finds no place for it in the therapy of the disease.

Other new methods are those by the injection of mercur-colloid, a colloidal metallic mercury similar to the colloidal silver, employed by Scholem and Werler,⁴ and the spray method advocated by Reves.⁵ The first is a preparation of the metal itself that is soluble in water, and seems to be eminently suited for hypodermic administration. Reves applies a 1 per cent. solution of sublimate in alcohol, with the addition of 10 per cent. of water, quickly to the whole of the body with a wad of cotton. The alcohol evaporates, leaving a thin layer of sublimate, and the author claims to have obtained excellent therapeutic results.

Heidingsfeld⁶ is also an advocate of the injection treatment, but objects to the bichloride on account of the frequent visits that are necessary and the painful indurations that occur. Calomel, he found, occasioned abscesses, which has not been my experience or that of others who have employed it tens of thousands of times. He, therefore, now employs a modification of Lang's formula, as follows:

R.—Hydrargyri bidestillata	6 parts.
Lanolini	2 "
To be rubbed up to complete extinction of the mercury.	
Ol. vaselini	4 "

I shall close this review with a brief account of the injection method, as it has now been a routine treatment with me for a number of years,

¹ Journal of the American Medical Association, August 30, 1902.

² Med. Obosrenje; Monatshefte f. praktische Dermatologie, June 15, 1902.

³ Monatshefte f. praktische Dermatologie, September 15, 1902.

⁴ Ibid., October 15, 1902.

⁵ Gaz. med. di Torini; Monatshefte f. praktische Dermatologie, June 15, 1902.

⁶ Journal of the American Medical Association, September 13, 1902.

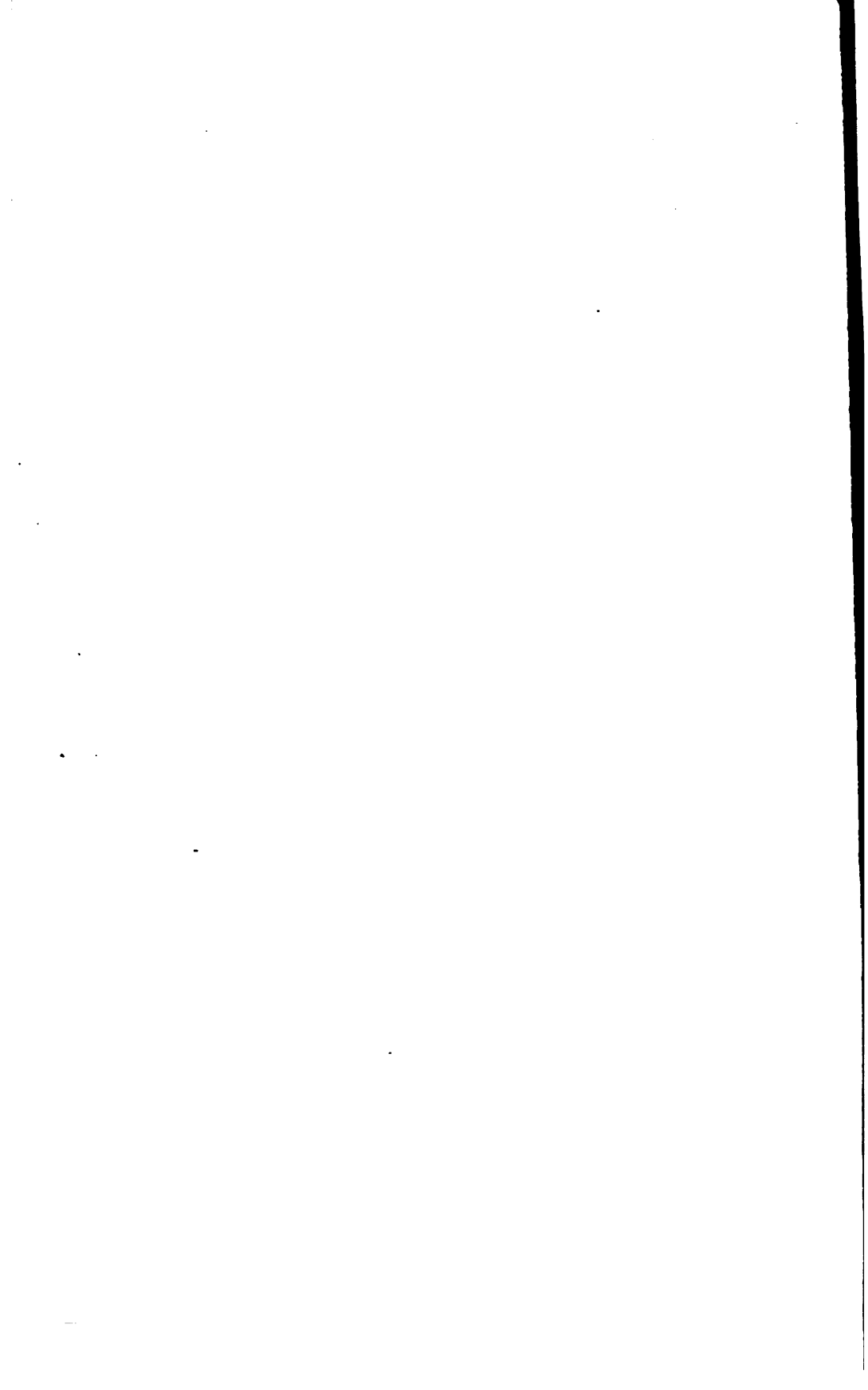
and of which I have elsewhere published the details.¹ An ordinary hypodermic syringe can be employed, preferably all of glass, so that it can be sterilized by boiling. The needle should be long and of large calibre; the so-called "antitoxin size" is suitable. A separate needle should be kept for each patient, so as to avoid the too frequent "flaming" so injurious to the needle. The injection is to be made into the buttocks in the intertrochanteric space, where it gives the patient less discomfort than anywhere else. The skin is washed with carbolic acid and water, or with green soap, bichloride and water, and then with ether, an abundance of the latter being used so as to partly deaden the sensibility of the skin. The ether pledget is withdrawn from the skin only at the moment that the needle is inserted. The needle, with the syringe attached, is then plunged to the hilt into the gluteal muscles. The amount of discomfort to the patient depends almost entirely upon the rapidity with which this last manœuvre is executed.

The syringe, which should have a slip and not a thread attachment to the needle, is then detached, and the white fluid in the proximal end of the needle watched for a few seconds. Transfixion of a vein is harmless; but if, perchance, the point should be engaged in the lumen of a vessel, the injected oily material might cause a fat embolism of the lungs. Projection and extrusion of the white injection fluid or the appearance of blood shows penetration, and in that case the needle must be withdrawn and another puncture made. During the last three years in which I have invariably observed this precaution I have only once had occasion to repuncture, and I do not believe that embolism need ever occur. In almost all the reported cases of its happening, however, its effects have not been serious, and the patient has entirely recovered in twenty-four hours. When everything has been demonstrated to be safe the syringe is reapplied and the injection slowly made. A small wad of cotton is applied the instant the syringe is withdrawn, and a piece of rubber plaster used to close the orifice.

The preparation that I now invariably employ is a 10 per cent. suspension of the salicylate of mercury in liquid albolene, sterilized, and preserved in small vials. Each minim thus equals one-tenth of a grain of the salt. The dose is from 8 to 15 minims; the injections are repeated at intervals of from seven to twenty-one days; the length and number of the courses, as well as the dosage, depending on the course and severity of the disease and its reaction to treatment.

Consideration of the minutiae of the treatment and of its many advantages would lead me too far here, but I would earnestly recommend it to all who have occasion to treat luetic cases.

¹ Syphilis: Its Diagnosis and Treatment. Chicago, 1902.



DISEASES OF THE NERVOUS SYSTEM.

By WILLIAM G. SPILLER, M.D.

DISEASES OF THE BRAIN.

Brain Tumor.¹ During the last decennium the diagnosis of cerebral tumor was made in 67 cases in the medical clinic in Bonn, and Rudolf Finkelnburg gives the important symptoms of these cases.

Operation was performed in 3 cases of cerebellar tumor. In 1 case an opening was made on the right side of the skull, but without the finding of a tumor; a second opening revealed a glioma weighing eighteen grammes situated in the left cerebellar lobe. The tumor was removed, and the patient was well a year and a half after the operation. In the second case the operation was useless, but in the third a cyst was found near the median line and emptied. In most of the 22 cases of cerebellar tumor it was impossible to determine by the clinical signs the side affected. A tendency to fall always toward the same side was an unreliable sign. Only in 2 out of 13 cases of cerebellar tumor with necropsy was a circumscribed sarcoma found, and one of these tumors could have been removed, but with difficulty. Most of the cerebellar tumors were infiltrating cystic sarcomata and gliomata. In 4 cases of cerebellar tumor with necropsy choked disk was not detected, and the patellar reflexes were diminished in 5 cases and active but not very exaggerated in 4 cases.

The resemblance that disseminated sclerosis may bear to cerebellar tumor is shown in one of the cases reported by Finkelnburg. A young girl, who had complained for a time of hypersensitiveness to light and impaired vision, was afflicted with severe headache and pain in the back of the neck, cerebellar gait, weakness, and paræsthesia in the lower limbs. The pupils were unequal and slight nystagmus was present. Cerebellar tumor, disseminated sclerosis, and chronic hydrocephalus were considered, and a diagnosis of cerebellar tumor was thought to be the most probable until the further course of the disease showed that the case was one of disseminated sclerosis.

One of the cases Finkelnburg reports shows how difficult the diagnosis of brain tumor may be. A boy, aged fifteen years, began to get

¹ See PROGRESSIVE MEDICINE, March, 1903.

tired easily after slight exertion, his appetite became poor, and he grew emaciated, and had increased thirst and polyuria. A year later vision began to be imperfect and was finally entirely lost. He had no headache, and vomited very rarely. He was poorly developed for his age when he was eighteen years old, and had bilateral optic atrophy, and these were the only signs of brain tumor. Polyuria and optic nerve atrophy are not sufficient signs for a diagnosis of tumor, and yet the boy had a sarcoma of the third and lateral ventricles. It was not known whether choked disk preceded the optic atrophy or not. There was very little on which to base a diagnosis of tabes or parietic dementia or disseminated sclerosis in this case. Gummatous meningitis implicating the chiasm seemed improbable, because of the youthful age of the patient and the absence of signs of hereditary syphilis. The diagnosis of tumor was made by exclusion, but a diagnosis made in this way is usually uncertain. Polyuria and polydipsia are not uncommon signs of tumor in the region of the hypophysis.

Another case reported by Finkelnburg is also of unusual interest. A woman, aged twenty-nine years, began to complain of frontal headache, vertigo, ringing in the ears, diplopia, which, however, was of short duration, some rigidity of the lower limbs, and constipation. The right pupil was larger than the left, slight nystagmus was observed on lateral movement, the tendon reflexes were slightly exaggerated, and the tongue deviated a little to the left. The eye-grounds were normal. Improvement soon occurred, and the symptoms mostly disappeared until two and a half years later, when they returned after childbirth, and choked disks were found. The difference in the size of the pupils was probably the most important of the early symptoms. The diagnosis of tumor was made, but the localization was very difficult. Temporary pain in the back of the neck, inco-ordination late in the disease, and vertigo suggested cerebellar tumor, but frontal headache and absence of vomiting made Finkelnburg hesitate in making this diagnosis. The long remission, the absence of all symptoms pointing to a lesion of the medulla oblongata, and the reappearance of symptoms after childbirth made this case noteworthy, because at the necropsy a round tumor, two centimetres long, was found in the fourth ventricle. Cases such as this have been several times reported, but they are rare.

In a case of tumor—the size of a cherry—in the interpeduncular space mental symptoms were very pronounced. The patient's memory was much impaired, and she was much confused. She did not recognize persons and her surroundings, and yet the tumor was small and at the base of the brain. Evening rise of temperature and rigidity of the neck made the diagnosis more difficult, because rigidity of the neck is

believed to be a rare sign of tumor in the middle cerebral fossa, and rise of temperature is more commonly a sign of meningitis. Inco-ordination, present in this case, could hardly be explained as the effect of pressure upon the cerebellum, because of the size of the tumor, but it might be attributed to compression of the midbrain.

The series of tumor cases of the brain reported by Finkelnburg¹ in this paper is exceedingly interesting and important. He shows also how the symptoms of chronic hydrocephalus may resemble those of brain tumor, but inasmuch as his cases of hydrocephalus are without necropsy the diagnoses lose some of their value, although so far as we are able to judge they seem to be correct. There can be no doubt that hydrocephalus may cause many of the symptoms of brain tumor, but acquired hydrocephalus is very rare in adults, and when it does occur the symptoms usually point to a diffuse lesion; so that we run less risk of operating unwisely than one at first thought might suppose. Congenital hydrocephalus may cause few or no symptoms in some cases until a head trauma produces a greater degree of intraventricular exudate, but in most cases careful inquiry will elicit some statement regarding headache, vomiting, or some such symptom existing from birth.

Lesions other than tumor may give nearly the same symptoms. Cysts are not uncommon, and sometimes a localized sclerosis of the brain is found at the operation, as in a case reported by Gussenbauer.² I have seen a softening of the brain cause symptoms exceedingly like those of tumor. Gussenbauer's patient lived about seven years after the operation, and during this time he had Jacksonian epilepsy, paresis of the right side of the face and of the right upper and lower limbs, disturbance of speech, progressive failure of intellect, etc. At the necropsy the findings were multiple sclerosis of the brain and spinal cord, and chronic internal hydrocephalus. The lesions, of course, had been progressive during the seven years. The left posterior central gyrus was much shrunken, and to this was probably attributable the focal symptoms. Vomiting also had occurred, but choked disk and headache were not present, and the latter are important signs of brain tumor. I have known, however, choked disk to be absent in a case of brain tumor of the motor area when the tumor was about one and a half inches in diameter, but absence of this sign during a period of seven years, even though focal symptoms were present, would make a diagnosis of brain tumor doubtful.

The osteoplastic method of operation is superior to all others where

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxi., Nos. 5 and 6, p. 438.

² Wiener klin. Wochenschrift, 1902, No. 38, p. 964.

it can be employed, and in this case it did not injure the patient, although the diagnosis was incorrect. The case shows how closely multiple sclerosis may resemble brain tumor in its symptomatology, and yet the differential diagnosis is not often demanded. With symptoms such as were present in this case operation was proper, because there was a chance of benefit to the patient from it.

Gumma of the brain sometimes demands operative treatment, as in the case reported by Bregmann and Oderfeld.¹ The patient had had syphilis, and had periostitis in the portion of the head in which the symptoms indicated the presence of a focal lesion. A vigorous anti-syphilitic treatment accomplished nothing. The skull was opened during status epilepticus, but the operation was too late to be of benefit to the patient. Jacksonian epilepsy was observed in this case. It is well known that this form of epilepsy by itself is not a positive symptom of a focus in the motor area, as it has been observed in affections of the frontal lobes, parietal lobes, subcortical areas, and even when the lesion is situated deeper in the brain, and yet this symptom in association with others, as unilateral weakness and aphasia, is of great value. Bregmann and Oderfeld believe that the sooner the Jacksonian epilepsy appears, and the more it precedes the general and focal symptoms, the more reliable it is as a sign of disease in the motor cortex. In their case two large gummata of the right frontal lobe were found at the necropsy, which were sufficiently near to cause irritation of the motor area. A tumor which occupies a large part of the surface of the frontal lobe may produce the same symptoms as one of the motor area, therefore, it is not wise to make a small opening in operating in cases of brain tumors. The danger of shock, possibly, may be increased by a large opening in the skull, although this is questionable, but the danger of overlooking a tumor is lessened, and the condition of the head after an osteoplastic operation is all that could be desired.

Mills² has reported a second case of tumor of the brain in which a shadow of the tumor was obtained by the *Roentgen rays*. This case is interesting also because of the size of the tumor and the compression of both carotid arteries to lessen hemorrhage. Two attempts were made to remove the tumor, but at the first so much bleeding was caused that the operation was postponed after a trephine opening had been made. The tumor, which was nearly globular and about three inches in diameter, was removed at the second operation, but the patient died three or four hours later. Mills believes from a study of this case and others that as soon as a brain tumor is clearly diagnosed, if presumably

¹ Mitteilungen aus den Grenzgebieten der Medicin und Chirurgie, 1902, vol. x. p. 516.

² Philadelphia Medical Journal, September 27, 1902, p. 439.

it is in an accessible area, operation should be performed. This is wise, but too often the relatives hesitate in giving their consent until they have become impressed by the gravity of the symptoms and the tumor has attained a large size. Mills believes, also, that Roentgen ray investigation should be added to the other methods of making a diagnosis; that large openings in the skull should be made; that the operation should be osteoplastic in order not to leave a permanent opening in the skull; that preparation should always be made to perform a Crile operation for temporary clamping of the carotids as soon as hemorrhage becomes threatening, and that the operation in some cases should be done in two stages, the propriety of this procedure being determined by the circumstances attending the first operation.

Mills believes that the *stereognostic perception centre* is located in the superior parietal convolution and its correlative convolution on the mesial aspect of the hemisphere, the precuneus or quadrate lobule. The evidence offered for this view has been derived chiefly from cases of brain tumor. The *centres for cutaneous sensibility* have been placed in the limbic lobe and in the posterior half of the postcentral convolution, between the stereognostic centre and the motor region. The *centres for muscular sensibility* have been placed in the superior and inferior parietal convolutions. Mills recognizes three forms of astereognosis: (1) cases of sensory astereognosis, in which inability to recognize an object by contact is dependent largely or altogether on sensory impairment; (2) cases of motor astereognosis, in which a similar incapacity is due largely to motor impairment, and (3) cases of pure astereognosis, very rarely seen. Mills has modified a little his diagram as regards the motor area, and he places the line indicating its posterior limits in the middle of the postcentral convolution. He includes the retroinsular convolutions in the auditory area. The visual area does not differ very materially from the visual area recognized by the best authorities. He regards the prefrontal region, especially on the left side, as the location of higher psychical functions, and he offers some important evidence in support of his localization of a naming centre in the temporal lobe. Localization has a great importance in cases of brain tumor, and it is interesting to read Mills' statement that in spite of a somewhat general pessimistic tendency regarding operations for intracranial tumors he is more hopeful now than ever before. He favors the osteoplastic operation, because a cerebral area of large size can be uncovered, and the bone replaced in position will usually retain its vitality. The new instrument for making this flap, devised by T. C. Stellwagen, Jr., he regards as a valuable addition to our means of coping with brain tumors.

Those who hold that tumors can only be localized when they are in

the motor region should read carefully this paper by Mills,¹ in which numerous areas are marked out upon the skull and the symptomatology of a tumor situated in each area is given.

In the hands of C. H. Frazier the dental engine, if anything, has been better than the Stellwagen trephine for opening the skull. Dr. Frazier has recently removed a tumor in one of my cases by this method, and only eight minutes were consumed in cutting through the bone and turning back a large flap. He has employed the dental engine in other cases of brain tumor, and always with success.

Mills² has given in another paper his views of the methods to be employed in operating on brain tumors. He emphasizes, again, the importance of X-ray investigation where tumor is suspected, and the importance of mapping out the fissures before the patient has been etherized, as in this way the duration of the operation may be shortened. The osteoplastic operation is not suited to all parts of the skull, but it is difficult for a neurologist to understand why many surgeons do not resort to this method where it is applicable. The results in preserving a bony covering for the brain are so great that it would seem unnecessary to even refer to them. Mills reports a case of *gumma of the cerebral dura* which was removed by operation. The patient has been greatly benefited, and is now in excellent condition. It is difficult to find the scar, so perfect has been the union of the tissues. In a case of mine, very similar to the one Mills reports, much improvement was obtained by the removal of a gumma of the cerebral dura.

MYXŒDEMA AS A SIGN OF BRAIN TUMOR. Brain tumor does not often cause the signs of myxœdema, but it seems to have done so in a case observed by S. Auerbach.³ Myxœdema in this case was suggested by the condition of the skin, the slowness of mental function, the apathy without focal symptoms, the violent but not continuous headache, the occasional vomiting, the subjective sensation of cold, the amenorrhœa, and the indistinctness of the thyroid gland. The swelling of the skin diminished and the mental condition became better under the administration of thyroid extract. Auerbach has found only one case of brain tumor in the literature which, like his, presented the symptoms of myxœdema. It is difficult to determine whether these symptoms existed independently of the brain tumor or not. When the patient first came under observation the eye-grounds were normal, but later papillitis, left-sided exophthalmos, and weakness of the trunk were detected. Headache and vomiting were not so pronounced as they usually are in cases of brain tumor, but the mental symptoms were

¹ Journal of the American Medical Association, October 4, 1902, p. 828.

² Philadelphia Medical Journal, November 29, 1902, p. 836.

³ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxii., Nos. 3 and 4, p. 312.

distinct. The sudden appearance of choked disks and weakness of the **trunk** muscles in this case were remarkable. The patient also had a **tremor** like the intention tremor of multiple sclerosis; it was present **only** on voluntary movement. The tumor was a fibrosarcoma or **angiofibrosarcoma**, and occupied the frontal lobes.

TUMOR OF THE FRONTAL LOBE. Jacksonian epilepsy, headache, and choked disks were the symptoms in a case which made C. W. Burr diagnose brain tumor of the prefrontal lobe. W. J. Taylor¹ operated in the right Rolandic region and removed some cerebral tissue which appeared to be abnormal, but which was not of tumor structure, as shown by the microscope. Muscular wasting came on acutely nine months after the operation, and was intense in the left forearm and hand, but not so marked in the left calf, thigh, and shoulder. Left-sided hemiplegia and hemianæsthesia to touch developed immediately after the operation. The muscular atrophy progressed rapidly, and with its appearance the contractures disappeared and the deep reflexes were abolished. It is to be greatly regretted that a necropsy could not be obtained.

The evidence seems to show that the frontal lobes are especially concerned with mental functions. C. W. Burr² has presented clearly the views of writers on this subject, and he reports a case of *tumor of the left frontal lobe*. As he himself says, the case would prove of little value if it stood alone, because the mental disturbance developed so late that it could have been a general instead of a local symptom, and because the great increase of intracranial pressure could have caused the symptoms. Burr thinks, however, that his case affords some evidence that the prefrontal region is in closer relation with mental processes than are some other parts of the cerebrum.

DIFFUSE SARCOMA OF THE PIA. Nonne reports a case which he diagnosed as one of tumor of the corpora quadrigemina, with metastasis to the spinal cord. The commencement of the symptoms with headache, vertigo, impaired vision without optic neuritis; the oculomotor palsy, the pain in the neck and back, the loss of the reflexes, and the hypotonia could be explained by this diagnosis. Although the symptoms resembled those of cerebrospinal syphilis, the absence of a history or of signs of syphilitic infection and the negative results of antisymphilitic treatment made Nonne regard syphilis as improbable, and the rapidity of progress and severity of the disease were believed by him to be unusual in syphilis. The absence of signs of tuberculosis elsewhere in the body and the duration of the symptoms over a period of more than

¹ American Journal of the Medical Sciences, July, 1902, p. 34.

² Philadelphia Medical Journal, January 31, 1903, p. 217.

seven months made the diagnosis of tuberculous disease of the spinal cord seem doubtful to Nonne. A microscopic examination of the brain and spinal cord showed the pia everywhere diffusely infiltrated with cells which had their origin in the endothelium of the lymph spaces surrounding the bloodvessels. No primary tumor in the central nervous system or elsewhere was found.

It seems remarkable that in this case of diffuse sarcomatosis of the pia of the entire central nervous system nothing pathological could be seen by the naked eye. The pathological findings were not unlike those of syphilis of the central nervous system, but circumscribed tumors, gummata, which Nonne thinks are rarely absent in syphilis, were not found; the bloodvessels were normal except where they were compressed by the tumor cells, and the cellular infiltration of the pia was more uniform than it is usually in syphilis.

The clinical diagnosis in this case was not easy. The symptoms at first were so indefinite that they were regarded as hysterical in nature, but this diagnosis had to be abandoned later. The severity of the symptoms in comparison with the relative integrity of the nervous tissue leads Nonne¹ to discuss the cases in which bulbar symptoms were believed to be produced by the toxin of a tumor situated in the nervous system or elsewhere when no lesions of the bulb were found. This is a subject of very great practical importance, because when grave signs of bulbar implication are seen in a case of tumor outside of the nervous system we are inclined to believe that lesions would be found in the bulb, and to forget that—at least in the opinion of certain writers—the poisonous products of a tumor may cause symptoms of disease of the central nervous system when no changes can be detected at necropsy. Extraordinary as this may seem, there are carefully studied cases which admit of no other interpretation, and the cases of myasthenia gravis pseudoparalytica, which are now numerous, can hardly be explained in any other way.

LIPOMA OF THE CORPUS CALLOSUM. Lipoma of the central nervous system is a rare finding, and when it does occur in the brain it seems to be more frequently in connection with the corpus callosum than any other part. Adolf Würth,² in a case in which the symptoms were congenital imbecility, epilepsy and right hemiplegia with contractures, found a lipoma occupying the entire corpus callosum and extending one-half centimetre into the left cerebral hemisphere, and causing internal hydrocephalus. The author speaks of the difficulty of diagnosing tumors of the corpus callosum, but he does not seem to be familiar with

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxi., Nos. 5 and 6, p. 396.

² Archiv f. Psychiatrie, vol. xxxvi., No. 2, p. 651.

the carefully prepared paper by Putnam and Williams on this subject, to which I have referred in *PROGRESSIVE MEDICINE*.

TUMOR OF THE CORPORA QUADRIGEMINA. A remarkable case of tubercle of the corpora quadrigemina has been reported by J. Sörgo.¹ Bilateral oculomotor and trochlear nerve palsy and left-sided hemiparesis developed in a man, aged twenty-eight years, within a few weeks. He had also bilateral beginning optic atrophy with contraction of the visual fields, especially of the right half of each field. The tendon reflexes were exaggerated and the left extremities were slightly ataxic. In the entire ten months' duration of the disease he had no headache, no vertigo, no vomiting, no choked disks, no central deafness. During the progress of the disease there was transitory paresis of the left facial, abducent, and motor trifacial nerves, and also muscular contractions of the left extremities, resembling a coarse tremor, and persisting during the waking hours and increased by voluntary motion. During the development of the disease fever was present, and the temperature of the left side of the body was higher than that of the right. Death occurred with symptoms of meningitis.

These symptoms might have been caused by a lesion of the cerebral end of the pons or of the cerebral peduncle, or by a lesion of the corpora quadrigemina. It was peculiar that both oculomotor and both trochlear nerves were paralyzed before the left-sided paresis of the limbs developed, and that this paresis of the limbs was slight, if the lesion were in the pons or cerebral peduncle. Sörgo believed that a tumor of the corpora quadrigemina was improbable because of the absence of all general tumor symptoms, although choked disks are frequently absent in tumor of this region, and because a tumor of this region would cause compression of the aqueduct of Sylvius and internal hydrocephalus resulting therefrom; and the symptoms of hydrocephalus, headache, vertigo, vomiting, had not been present. However, this case was one of tumor of the corpora quadrigemina, and the absence of these important symptoms makes it very instructive. It is not surprising that disseminated sclerosis was thought of, inasmuch as Siemerling is said to have observed multiple sclerosis beginning with oculomotor palsy, and yet there was little to justify a diagnosis of this disease. It is important to remember that choked disk has not rarely been absent when tumor of the corpora quadrigemina was present, and, also, that not rarely fever has been observed in cases of brain tumor, usually tuberculoma, and fever, therefore, may be indicative of the tuberculous nature of the tumor, even though meningitis is absent. The fever in this case was caused probably by the beginning tuberculous meningitis,

¹ *Neurologisches Centralblatt*, 1902, Nos. 14-17.

and the higher temperature of the paretic side by vasomotor disturbance.

The peculiar convulsive movements in this case, existing all the time the patient was awake, increased by voluntary movement, resembling a coarse tremor, and, extending gradually from one muscle group to another during the course of the disease, are worthy of attention. Tremor like that of paralysis agitans has been observed in cases of tumor of the cerebral peduncle and optic thalamus. Irritation of the cerebral cortex usually causes involuntary spasmodic movements in attacks, but in some cases it has caused continued involuntary spasmodic movements. Convulsive movements of one group of muscles have been regarded as of cortical origin, but Sörgo thinks his case shows that subcortical lesions may cause convulsive movements of one group of muscles, and that these convulsive movements may then extend from muscle group to muscle group, even from muscle to muscle, and, as in Jacksonian epilepsy, may become general. I am unable to see that this case shows so much. The tremor was constant and extended very gradually, days or weeks, from muscle group to muscle group. The case does not show that typical Jacksonian epileptic attacks, in which a spasm begins at one part, soon becomes more general, and is temporary, may be caused by a tumor of the corpora quadrigemina, and yet other cases seem to indicate that such a thing is possible. Sörgo's case, however, teaches the important truth that a tumor of the corpora quadrigemina may produce constant involuntary spasmodic movements of one group of muscles, which very gradually may extend to other groups—certainly a very remarkable phenomenon in view of our belief at the present time that the motor fibres innervating the centres for the upper and lower limbs are intimately mingled below the internal capsule, possibly even within the internal capsule.

TUMOR OF THE THIRD VENTRICLE. A peculiar form of nystagmus caused by a tumor filling a large part of the third ventricle is described by Bielschowsky. The movements of the eyeballs were convergent—*i. e.*, from without inward in the horizontal direction. The movements were caused by contractions of the internal recti muscles occurring at intervals, and yet voluntary convergence of the eyeballs was impossible. The cell bodies and nerve fibres of the oculomotor nerves supplying the internal recti muscles were supposed to be irritated by the tumor. This is certainly a very rare sign of tumor in the neighborhood of the corpora quadrigemina, and is especially interesting, as attacks of clonic spasm of the eyeballs seem to have been caused by irritation of peripheral neurones. Although the anterior colliculi of the quadrigeminal body were entirely destroyed and the pulvinar of each optic thalamus was much compressed, vision was only slightly

impaired. The reason for this probably is found in the integrity of the external geniculate bodies. There is little doubt that in man the latter are the most important of the "primary" visual centres. Temporal pallor of the optic disk in this case, like that seen in disseminated sclerosis, was caused by the tumor, and it is well to remember that pallor on the temporal half of the disk may be caused by brain tumor as well as by disseminated sclerosis.

In a case of fibroma of the posterior cranial fossa right-sided facial palsy and right-sided deafness indicated that the tumor was on the right side, but the limbs on the right side were more paretic than those on the left side. The necropsy revealed a fibroma at the union of pons and cerebellum on the right side, but the left anterior pyramid was more diseased than the right and contained an area of softening which probably had been caused by the tumor on the right side compressing the bloodvessels supplying the left side of the medulla oblongata. This case gives a satisfactory explanation of paralysis on the same side as a tumor of the pons or medulla oblongata.

In another case Bielschowsky¹ made the diagnosis of cerebellar tumor because of persistent vertigo, severe pain in the neck, rigidity of the muscles of the neck, ataxia which was distinctly cerebellar in type and made walking and standing impossible, nystagmus, weakness in the internal recti muscles, choked disk, and tenderness on percussion in the occipital region, especially on the left side. The necropsy revealed a tumor of the right frontal lobe. Mental symptoms and symptoms indicative of pressure on the cortical motor area were not observed in this case. Rigidity of the neck has been seen when a tumor was in the frontal lobe, but localized tenderness of the scalp on percussion has been regarded by Bruns and Oppenheim as of more diagnostic value. Bielschowsky's case shows that this sign also may be unreliable.

PARALYSIS OF CONJUGATE MOVEMENT IN TUMOR OF THE BRAIN. Paralysis of the lateral conjugate movement of the eyeballs is of rare occurrence; so that the case with necropsy reported by Alexander Bruce² is a valuable contribution. His patient had paresis of the left side of the face, complete paralysis of the conjugate movement of the eyes to the left, slight paresis of the conjugate movement of the eyes to the right, with a more marked partial paralysis of the left internal rectus on looking to the right; conservation of all the other ocular movements, including convergence; vertigo, formication of the left side of the face, and ringing of the ears. Convergence was perfect when the eyes were directed to a near object. It was believed that the connection between

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxii., Nos. 1 and 2, p. 54.

² Review of Neurology and Psychiatry, May, 1903, p. 329.

the right sixth nucleus and the nucleus for the left internal rectus, by means of the right posterior longitudinal bundle, was partially interfered with, and a diagnosis was made of a lesion destroying the left sixth nucleus, infiltrating the left facial nerve in its course around this nucleus, and affecting some part of the left fifth nerve, and also passing across the raphé so as to implicate the right longitudinal fasciculus, and to a less extent the right sixth nucleus. The lesion was believed to be of small size, as it had not implicated the pyramidal tract or any of the other motor cranial nerves, and as the paralysis of conjugate deviation had not occurred suddenly the lesion was thought to be of tuberculous or gliomatous nature.

At the necropsy a gelatinous infiltration was found covering the pons, medulla oblongata, corpora quadrigemina, and the roof of the fourth ventricle, which subsequently proved to be tuberculous in nature. A small tumor occupied the upper part of the pons. It almost completely filled the upper part of the fourth ventricle and invaded only the posterior part of the pons. It occupied the position of the two abducens nuclei and the facial nerves, as well as the posterior longitudinal fasciculi, but it did not reach the fillet, at least so far as could be determined macroscopically. The tumor was of tuberculous nature.

We must believe from the evidence at hand that the view originally suggested by Foville in 1858 is correct, viz., that the abducens nuclei are the lower centres for the lateral conjugate deviation of the eyes, although the exact path by which each abducens nucleus controls the opposite internal rectus is not yet completely determined. As Bruce says, there is a fairly general consensus of opinion that the fibres which form the first part of this path, after leaving the abducens nucleus, ascend within the posterior longitudinal fasciculus, but there is no such agreement as to whether they enter directly into the third nerve and pass by it to the internal rectus or whether they terminate in the nucleus of the third nerve. It is not determined in the latter case whether they end in the third nucleus of the same side or whether they cross over to that of the opposite side; and if they do pass over to the other side, whether they do so at the level of the abducens or of the oculomotor nucleus, or at some intermediate point. Bruce concludes that the crossing takes place considerably above the level of the sixth nucleus.

It is interesting, and yet in conformity with other cases, that under the administration of iodide of potassium and with absolute rest in bed distinct improvement in the symptoms for a time occurred in Bruce's case. The vertigo diminished and the paralysis became less marked.

Aphasia. Transitory aphasia is usually a serious symptom, because it occurs not infrequently in paretic dementia. It has been observed also in hysteria, and a case of the kind has been reported recently by Max Rothmann,¹ but it is more uncommon in hysteria than is mutism. Still more rarely is it a sign of insolation. Rothmann has observed a case in which the transitory aphasia seemed to be caused by heat-stroke. A man was exposed to severe heat during three-quarters of an hour while walking over a field. The evening of the same day he suddenly lost the power of speech and fell unconscious. A half-hour after the beginning of the attack voluntary power had returned in all the limbs, and later in the evening of the same day motor speech was restored. Rothmann reports another interesting case of transitory aphasia in which mental exertion, a fall from a horse, although apparently without serious consequences, exposure to heat, overloading of the stomach, and indulgence in alcohol seemed to be the causes. A few cases in the literature somewhat similar to this one are referred to by Rothmann. He reports a case of transitory aphasia with right hemiplegia and later the aphasia became permanent, and this he believes was caused by embolism. The case was without necropsy. He thinks the first attack may have been caused by an embolus which later became broken up, or was pressed against the wall of the vessel so as to permit the blood to pass, and that still later a second embolus caused the permanent aphasia. Rothmann's object in writing this paper is to call attention to the organic character of many cases of transitory aphasia, and to warn against the too hasty diagnosis of hysterical aphasia.

APHASIA IN PREGNANCY AND THE PUERPERIUM. Aphasia occurring in the puerperium or in the last months of pregnancy may be caused by disease of the bloodvessels, cardiac or renal disease, or hysteria, but according to the investigations of M. A. M. Sinclair² a certain number of the cases cannot be explained in this way. The explanation he gives for these rare cases depends on the composition of the blood and the greater tendency to the formation of clots within the vessels in puerperal women. In the list of cases given by Sinclair with one exception the aphasia developed either during the four later months of pregnancy or during the period immediately following delivery. This period corresponds with that in which the blood is most altered. Several of those who have reported cases of puerperal aphasia have attributed it to thrombosis. In Sinclair's case thrombosis in the veins of the lower part of the right leg occurred two days after the onset of the aphasia. There was no varicosity of the veins of the leg, and the

¹ Berliner klin. Wochenschrift, 1903, Nos. 16 and 17.

² Lancet, July 26, 1902, p. 204.

patient was in bed in the recumbent position. It seems probable, therefore, that a similar thrombosis in the cerebral vessels was the cause of the aphasia. Another argument in favor of thrombosis is the recurrence of the aphasia in subsequent pregnancies in several cases. It seems probable that the first attack left histological changes in the vessel wall which formed a seat of election for the development of another thrombus when the vascular conditions were again favorable to such an accident. According to Sinclair's table there is a large proportion of recoveries from a first attack of puerperal aphasia. This is explained by him by resolution of the thrombus or the establishment of a collateral circulation. The second attack has always been much more serious than the first, and the prognosis is so grave that the danger of its occurrence should be made known to a woman who has had one attack of puerperal aphasia in order that another pregnancy may be avoided. Sinclair goes so far as to advise that when pregnancy does occur in a woman who has had puerperal aphasia it should be terminated at the earliest possible moment. This is, of course, very serious advice, but the danger of permanent aphasia and hemiplegia is also very grave.

SENSORY APHASIA. A remarkable case of sensory aphasia has been reported by Joffroy.¹ The case was not so remarkable in its symptomatology as in its pathology. The patient had word-deafness, word-blindness, paraphasia, and agraphia. The lesion naturally was supposed to be in the speech area of the left hemisphere, but the necropsy revealed an area of softening in the middle portion of the right first temporal convolution and meningoencephalitis about it. Only three cases of sensory aphasia (Kussmaul, Touche, Köster) with lesions in the right side of the brain seem to have been reported, and Joffroy's case now makes four. The three cases occurred in left-handed persons, but Joffroy's patient wrote and ate with the right hand, and those who had known him had not observed that he was left-handed. Joffroy, with admirable caution, suggests that the man nevertheless may have been left-handed and have learned to use his right hand chiefly.

In the discussion that followed the reading of this interesting report Dejerine remarked that he had a patient who was left-handed, but who had written with her right hand as do most left-handed people. This patient had become motor aphasic and left hemiplegic. Word-blindness or word-deafness was not observed, but she had left lateral homonymous hemianopsia. At present this patient can write only her signature when she attempts to write voluntarily or on dictation, but she can copy, and copies printing into script. This case appears to Dejerine

¹ *Revue Neurologique*, January 31, 1902, p. 112.

as another evidence that a graphic centre does not exist, because before she became aphasic she wrote with innervation from her left hemisphere, but now when Broca's area in the right hemisphere is destroyed she is unable either to write or to speak.

PURE SENSORY APHASIA. The German writers especially have sought to explain the difficult subject of aphasia by distinguishing many types, but it is probable that their distinctions are too schematic. Wilhelm Strohmayer¹ discusses the subcortical sensory aphasia of Lichtheim, or pure sensory aphasia of Dejerine, which he says is characterized clinically by loss of the understanding of spoken words without loss of the power to read or to write voluntarily. This, however, is only one form of sensory aphasia. The cases of pure sensory aphasia are not numerous in the literature, but they are sufficiently so to show that the causative lesion is not necessarily subcortical. Strohmayer's case was one of this character. A physician became infected with syphilis and presented symptoms indicative of syphilis of the nervous system. In addition he was unable to understand spoken words, to repeat or write on dictation, but he could speak although he sometimes presented aphasia; he could write voluntarily and copy script and understood writing or printing. The diagnosis of atypical paralytic dementia with focal symptoms of subcortical sensory aphasia was made, and yet a diffuse chronic meningoencephalitis with signs of recent syphilitic inflammation of both temporal lobes was found. The lesions were most pronounced in the cortex, whereas those in the white matter consisted only of an increase in the number of the bloodvessels and thickening of their walls. This case is one more to demonstrate that "subcortical" aphasia may result from cortical lesions, and it is worthy of note that in this case both temporal lobes were diseased.

We must agree with Strohmayer when he says that transcortical and subcortical aphasia have been found as the symptoms of differently situated lesions, even of lesions implicating the cortex extensively. He seems inclined to accept the theory that partial injury of the cortical elements may cause impairment without abolition of function. This applied to his case would mean that the cortical lesion was not sufficiently intense to cause cortical sensory aphasia, but produced merely the form known as "subcortical."

Strohmayer has examined the cases of subcortical sensory aphasia he has found reported. In one case the lesion was unilateral and in five bilateral, implicating the cortex and subcortex of the temporal lobe. In only one case was the lesion said to be confined to the left temporal subcortex. He hesitates from these reports to localize the lesion causing pure sensory aphasia, but he believes that it is probably

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxi., Nos. 5 and 6, p. 371.

a bilateral lesion of the temporal lobes, and yet some cases make this doubtful.

Strohmayer reports another case in which optic aphasia—inability to name an object when it is merely shown to the patient—was a prominent symptom, and an old hemorrhage and tumor of the left temporal lobe were found. In twenty-five cases of otitic abscess of the left temporal lobe collected by Merkens inability to name objects was a prominent symptom, whether the impression were made by vision, hearing, or touch. The most common symptom of otitic abscess of the first temporal lobe is, therefore, optic or amnesic aphasia and not pure sensory aphasia.

HEREDITARY APHASIA. A remarkable form of family disease and unlike any that have previously been reported is described by W. G. Stone and J. J. Douglas¹ under the title of hereditary aphasia. The disease was observed in eight members of a family, three cases occurring in one generation and five in the generation following. There was sufficient resemblance between the cases, in the opinion of the authors, to exclude accidental similarity. The lesions observed in the most recent cases suggest a syphilitic origin for the disease. The main features of the disease do not become manifest until the patient is attaining to adult life, and are incontinence (or retention) of urine, attacks of temporary aphasia with loss of power on the right side of the body, gradually increasing opacities in the vitreous humor of the eyes, loss or diminution of the senses by which pain and temperature are appreciated, muscular weakness, epileptiform convulsions, and sudden death preceded by complete unconsciousness. Wasting of the soft tissues is marked only during the later stages of the disease. In the family described by Stone and Douglas three sisters were affected; a brother was healthy at the age of sixty-seven. One sister soon after her marriage, when she was twenty-seven years of age, began to suffer from attacks of aphasia, which came on at long intervals, and in these attacks she "dropped things." By the time she was thirty-four years of age her sight had become much affected. She died at the age of thirty-eight years, after being partially paralyzed four years. Her elder sister had temporary attacks of aphasia, with loss of power in the right arm. Her younger sister suffered from temporary attacks of aphasia and paralysis in the right arm, and from a gradual loss of vision. The married sister had four sons and two daughters. The three elder sons died between the ages of twenty-two and twenty-four years. The elder of the two daughters was healthy until her thirtieth year, but since then her eyesight has become defective on account of

¹ Brain, Autumn, 1902, vol. xxv., p. 293.

vitreous opacities. The younger daughter died at the age of twenty-four years, without showing any of the characteristic symptoms of the disease. The eldest son died at the age of twenty-three years, death being ascribed to apoplexy. The first symptom was said to be incontinence of urine, and this was followed by short attacks of aphasia, and still later by epileptiform seizures. The second son, when twenty-two years of age, suddenly lost the power of his right hand for two or three hours, and later he had one or two attacks of aphasia, and he died in an attack of unconsciousness. The third son died at the age of twenty-four years, having been ill for two years. He had suffered from "incontinence" for about twelve months before his death. He also had temporary aphasia, and died in an attack of unconsciousness. The fourth son began to show symptoms when about twenty-three years of age, and the first symptom was "incontinence" of urine, but probably "incontinence" in all these cases was really retention. He had impaired vision. Later the senses of pain and temperature were very markedly affected, especially in the lower limbs; the knee-jerks were sluggish, the light reflex of the right eye was sluggish, and the right pupil was smaller than the left; shooting pains in the limbs were frequent, drowsiness was marked, and hearing was imperfect. Still later he had attacks of aphasia, with temporary weakness of the right arm, and general weakness became excessive. He had also convulsions.

A necropsy was obtained in this case and spinal leptomeningitis was found, extending from below upward until the cerebral meninges were affected in a like manner, chronic in its course, but intense enough to implicate the cord superficially and many of the nerve roots in the inflammatory process. The great vascularity and numerous hemorrhages in the inflamed area suggested an inflammation hemorrhagic in type, and the excess of arachnoid tissue suggested that this constituent of the pia-arachnoid was especially involved. The tract degeneration in the cord was manifestly the result of damage to the lower posterior roots. In the opinion of the authors this disease was probably of syphilitic nature, but this cause is by no means made out.

I have devoted considerable space to this important paper because the symptoms seem to constitute a distinct entity and the affection is unlike any known in medical literature. The forms of family disease are constantly increasing, and not the least interesting is this hereditary aphasia of Stone and Douglas. It seems strange that such a striking group of symptoms should have escaped attention for so long, for the disease in this family has existed for years. The pathological findings do not fully explain the symptoms.

Hemiplegia and Hemianæsthesia. It is the opinion of most neurologists that a separation of the motor fibres within the posterior

limb of the inner capsule exists, so that the fibres for the upper limb, for example, might be injured while those for the lower limb escape. Capsular monoplegia is, therefore, possible according to this view, which depends chiefly on the experimental work of Beever and Horsley on monkeys. The subdivisions of the inner capsule made by different neurologists vary greatly. P. Marie and G. Guillain¹ discuss this important subject in a valuable paper. The results obtained by experimentation on animals they hold cannot be applied directly to man, and they depend on the anatomico-clinical method for their conclusions. They emphasize the importance of making numerous microscopic sections of the entire central nervous system, because an area of softening may exist at some unexpected point and modify greatly the symptoms, which in a less thorough examination might be attributed to the destruction of some other region. They discard entirely the view that fasciculi exist, which, when injured, cause hemichorea and hemiathetosis.

Hemianæsthesia of central origin, according to Marie and Guillain, has peculiar features. Light touch may not be perceived, but pain sense is preserved, especially if the painful stimulus is repeated a number of times, causing summation of excitation, and this perception is shown by unconscious reflex movements, and yet the hemianæsthetic hemiplegic does not appear to interpret correctly the sensation felt. It is this imperfect interpretation, according to Marie and Guillain, which prevents the patient from recognizing the cause of his involuntary movements, and from carrying his sound hand to the region of the body irritated by the painful stimulus. The sensory disturbance of organic hemiplegia is seldom persistent.

Marie and Guillain attempt to determine by the anatomico-clinical method—observing symptoms and later studying the lesions found at necropsy—whether there is a sensory zone in the internal capsule or not. They have examined in ten cases of hemiplegia microscopic sections of the lesions situated in the so-called sensory zone of the internal capsule, and sensory disturbances had not existed during life, although this area was destroyed. They believe that their cases prove that lesions of the so-called sensory zone of the internal capsule may exist without causing anæsthesia, and they say that they have examined more than thirty cases in which lesions of different parts of the lenticulo-optic segment of the internal capsule did not cause anæsthesia, this being the part which is supposed by Dejerine to contain the sensory fibres as well as the motor. Two cases they report are remarkable. Notwithstanding the lesions destroyed a great part of one cerebral hemisphere in each case and all the area supposed to be sensory, there

¹ *Semaine Médicale*, June 25, 1902, No. 26, p. 209.

was no persistent hemianæsthesia. They say they are ignorant as to whether the sensory fibres ascend through the *carrefour sensitif* of Charcot (posterior part of the posterior limb of the internal capsule), but they assume that sensory impulses may follow other tracts than this to reach the field of consciousness, and they do not believe that an area of muscular sensation exists in the internal capsule.

They believe that any lesion, however small it may be, implicating the posterior segment of the internal capsule, causes always hemiplegia and never monoplegia, and they base this opinion on the anatomico-clinical results obtained in the study of many cases.

They have found that a lesion of the knee of the internal capsule causes degeneration of the internal bundle of the cerebral peduncle, but it does not cause a definite symptom-complex. In most of their cases in which the knee was injured there was deviation of the tongue and face, but this was observed also in lesions of the internal capsule not implicating the knee, and even when the knee was implicated the deviation soon became less intense. It seems to me these authors are going too far when they assume that a lesion of the knee of the internal capsule should cause intense paralysis of the face and tongue if the fibres for the nuclei of the cranial nerves pass only through the knee. It is probable that each side of the tongue and face is well innervated from both sides of the brain, and that a unilateral cerebral lesion is unlikely to cause persistent intense paralysis of these parts.

They have found by the method of Marchi diffuse degeneration of the posterior limb of the internal capsule resulting from a circumscribed lesion of the motor cortical area, showing that the motor fibres in the internal capsule are not sharply divided into tracts.

These valuable investigations seem to show that capsular monoplegia is impossible; that sensory impulses are not confined to any one tract in their passage to the cerebral cortex, and possibly that in some cases one cerebral hemisphere may suffice for the perception of sensory stimuli applied to either side of the body.

Hemiplegia with subjective disturbance of sensation in the paralyzed limbs without objective disturbance of sensation, as in a case reported by Marie and Guillain,¹ is rare, but has been observed and reported several times. Marie and Guillain's case was without necropsy, and does not afford any information regarding the situation of the lesion. These authors compare the symptom-complex with the partial sensory epilepsy. Duchenne, of Boulogne, is said to have observed some cases in which the sensory symptoms preceded the hemiplegia.

¹ *Revue Neurologique*, May 30, 1902, No. 10, p. 464.

Gordon¹ has made an interesting clinical study of 35 cases of hemiplegia to determine the frequency of *sensory changes*, and he has found that all three forms of sensation were affected in the majority of cases. In the upper limb touch sensation was altered in 24 cases, pain sensation in 30, and temperature: heat in 33 and cold in 28. Diminution of sensation was most frequent, then anæsthesia, and, last, hyperæsthesia, in order of frequency. In the lower limb touch sensation was altered in 16 cases, pain sensation in 24 cases, and temperature: heat in 25 and cold in 25. Hypæsthesia was again most frequent, then anæsthesia, and, finally, hyperæsthesia. Touch sensation in the trunk was altered in 17 cases, pain in 27, and temperature: heat in 23 and cold in 23. Touch sensation was altered in the face in 9 cases, pain sensation in 19 cases, and temperature: heat in 17 and cold in 18 cases. In all the four portions of the body pain sensation was most altered, next came temperature sensation, and, finally, tactile sensation. Hypæsthesia was in all cases more frequent than anæsthesia and still more than hyperæsthesia. Sensory disturbances were more common in the upper limb than in the lower. Gordon also found, in confirmation of Verger's assertion, that the alteration of sensation diminished from the distal end of the limb toward the root. The stereognostic perception was disturbed in 29 cases out of the 35, and in 22 the loss was complete. The greater the involvement of the other sensations the more pronounced was *astereognosis*, from which Gordon argues that stereognostic perception is dependent upon the integrity of tactile, pain and temperature sensations. The sense of posture was implicated in the upper limb in 17 cases, from which it seems that disturbance of other sensations does not necessarily involve the posture sense. Sensation was disturbed in many more cases in the upper limb than in the lower, and in the majority of cases motor power was most affected in the upper limb. There seems, therefore, to be a parallelism between motor and sensory disturbances. In those cases in which the motor paralysis was not pronounced sensory disturbances were not great, and where motor paralysis was pronounced sensory disturbances were so also. Gordon also found that the longer the duration of the motor paralysis the less distinct were the sensory disturbances. He believes that sensory disturbances probably always accompany motor paralysis of cerebral origin, no matter to what extent the latter is developed, but the demonstration of this depends upon the method and persistence of the investigation. Unfortunately, Gordon's study was, of necessity, purely clinical, but it is nevertheless a valuable contribution to clinical medicine. His method of examination was thorough, and his results

¹ Journal of Nervous and Mental Disease, March, 1903, p. 144.

are reliable. It may surprise some that sensory disturbances were found in so many cases of hemiplegia.

HEMIPLEGIA IN THE YOUNG. Hemorrhage into the brain in a young person is so rare that the case reported by T. M. Pearce¹ deserves mention. A man, athletic, and nineteen years of age, complained of headache, and, at the same time, had twitching of his right hand, and very soon of the entire right arm. He lost consciousness, and then the convulsions became more general. A large blood clot was found in the cerebral ventricles, there being more blood in the left lateral than in the right lateral ventricle. No clot was found in the substance of the brain.

CONTRACTURE IN HEMIPLEGIA. It is well known that when contracture of the paralyzed limbs occurs in hemiplegia the upper limb is usually in flexion and the lower in extension. Occasionally the reverse of this is observed, but it is extremely rare to find the upper limb flaccid and the lower limb markedly contracted in flexion, as in a case described by Devic and Gallavardin.² The contracture in this case attained its maximum in less than twenty-four hours after the beginning of the hemiplegia. A lesion implicating slightly the internal capsule was found, but this does not explain the peculiar form of contracture, and the authors acknowledge their inability to give a satisfactory explanation.

HEMIPLEGIA FROM CARBON-MONOXIDE POISONING. The effect of CO poisoning is well shown in a case reported by C. Sibelius.³ A man, previously healthy, was exposed for a short time to CO gas and was overcome, and remained unconscious a day. When he regained consciousness he was completely blind, and soon had fever, convulsions, and disturbance in the reactions of the pupils, and again became unconscious. The symptoms of severe cerebral lesions persisted until death, three months later. Areas of softening were found in the lenticular nucleus and cerebral cortex. The exposure to the gas lasted only about five minutes, and yet it was the cause of severe changes in the walls of the bloodvessels of the brain. The vascular changes in the brain after CO poisoning vary greatly in intensity. The areas of softening are regarded by some as the result of closure of the bloodvessels and of ischæmia, by others as the result of encephalitis. CO also seems to have a direct effect upon nerve cells. It is probable that some of the changes wrought by CO are immediately upon the bloodvessels and nerve cells, and that others developing later are secondary to these vascular and nerve-cell alterations, and it seems that the exposure to

¹ *Lancet*, November 15, 1902, p. 1321.

² *Revue Neurologique*, January 31, 1903, p. 53.

³ *Zeitschrift f. klin. Med.*, vol. xlix., Nos. 1-4, p. 111.

the poisonous gas need not be of more than a few minutes' duration for the production of very serious lesions.

A case showing the effects of illuminating gas has recently come under my care. Three persons were partially overcome by the leakage of gas in their house. Two recovered, but the third became hemiparetic, and although he has regained almost normal voluntary power in the lower limb he is still weak in the upper limb and has some other slight cerebral symptoms.

HEMIPLEGIA OF CEREBELLAR ORIGIN. Ludwig Mann¹ attempts to show that a hemiplegia of cerebellar origin or of tracts connecting with the cerebellum may be different from that caused by a lesion of the pyramidal tract. In the case he reports there were left-sided hemiparesis involving all the muscles of the left limbs with atrophy of the muscles and slight exaggeration of the tendon reflexes, pronounced left-sided hemiataxia without impairment of sensation, loss of sensation in the distribution of the left trigeminal nerve, neuroparalytic keratitis, left-sided abducens paresis, complete paralysis of the left facial nerve with reaction of degeneration, and impairment of hearing on the left side. In a very similar case reported by Babinski a cholesteatoma was found on the base of the brain in the pontile cerebellar region.

As the hemiparesis in Mann's case was on the same side as the lesion of the fifth, sixth, seventh, and eighth nerves, Mann concludes that it could not have been produced by a lesion of the pyramidal tract. In hemiplegia from a lesion of the pyramidal tract certain groups of muscles are more affected than others, while in Mann's case all the muscles of the left limbs were equally weak. The hypertonia of pyramidal tract lesion was not present, and the exaggeration of the tendon reflexes was not so great as that caused by lesion of the pyramidal tract. Babinski's reflex was not obtained. For these reasons Mann concludes that the hemiparesis was from impaired function of the cerebellum. Much doubt has been entertained by many regarding the existence of cerebellar hemiparesis, but Mann brings forward some evidence in support of such paralysis, and he attempts to distinguish a symptom-complex for it different from that produced by lesion of the pyramidal tract. The paralysis of the limb in the former is uniform, so that all movements of the limb are weak, and it is flaccid, the tendon reflexes are never so much exaggerated as in the cerebral hemiplegia, the Babinski reflex is probably absent, although sufficient data are not at hand to determine this positively, and the ataxia is a prominent symptom. The cerebellar hemiplegia, according to Mann, is caused by injury

¹ *Monatsschrift f. Psychiatrie und Neurologie*, 1902, vol. xii. p. 280.

of centripetal fibres conducting regulating impulses from the cerebellum to the cerebrum, these impulses having their origin in the muscles.

HEMIPLEGIA FROM LESIONS AT THE BASE OF THE BRAIN. The French are especially fond of calling groups of symptoms after some man who has described them. Thus the symptom-complex of Weber is paralysis of the limbs on one side and of the oculomotor nerve on the other. The symptom-complex of Benedikt is the same, with the exception that tremor of the paralyzed limbs exists. D'Astros and Hawthorn¹ accept the view of Gilles de la Tourette and J. Charcot that the tremor is caused by the irritation of the pyramidal fibres from a lesion situated near this tract, but not destroying it, and in the upper portion of the cerebral peduncle. They report a case with the symptom-complex of Benedikt. The oculomotor palsy began with ptosis and later became total, although all the muscles innervated by this nerve were not equally implicated. The tremor varied in the number and extent of the oscillations, was associated with athetosis, and was increased by voluntary movements. The necropsy revealed a tubercle of the cerebral peduncle. In the cases that have been reported the tremor has varied greatly; sometimes there was an intention tremor; sometimes the movements were convulsive; sometimes they were choreiform, and in several cases a tubercle of the cerebral peduncle has been found. It is, however, questionable whether much is gained by calling this group of symptoms the syndrome of Benedikt, and there are doubtless many physicians who would not know what was meant by such a name. It is a form of crossed hemiplegia with tremor.

Rossolimo² has attempted to distinguish a symptom-complex indicative of lesions of the brain stem—*i. e.*, medulla oblongata, pons, and cerebral peduncle—but he is forced to depend chiefly on clinical observations. Some cases of this kind have been reported by others, and Rossolimo has had some of his own. A study of this character without pathological findings must necessarily be incomplete, and therefore, to some extent, unsatisfactory; but by no means useless. He thinks a circumscribed lesion of certain regions of the pons and medulla oblongata may cause dissociation of sensation of the syringomyelic type. The thermoanæsthesia and analgesia resulting from affections of the brain stem may implicate the entire one-half of the body, or face on one side and limbs and trunk on the other, or trunk and limbs of one side, leaving the face intact. Other symptoms may be present; indeed, it is likely that they will be in most cases, and most frequent are cerebellar ataxia and impairment of function of the cranial nerves. It is probable, therefore, that special tracts for the fibres of temperature and

¹ *Revue Neurologique*, May 15, 1902, No. 9, p. 377.

² *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xxiii., Nos. 3 and 4, p. 243.

pain sensations are located in the brain stem and in its dorsolateral portion, and that these tracts are the continuation of the corresponding tracts in the spinal cord. These conclusions can hardly be disputed, but what is needed now is more accurate determination of the situation of the sensory tracts in the medulla oblongata, pons, cerebral peduncle, and basal parts of the cerebrum. We are beginning to obtain more accurate knowledge regarding the situation of the corresponding tracts in the spinal cord.

Injuries of the Brain. When we are brought before a patient who has received a severe injury of the head and is unconscious, we have to decide whether an operation would be advisable and how soon it should be done. I¹ have recently discussed this subject with the report of several cases. If a subdural hemorrhage is small the brain may accommodate itself to the altered conditions after a time and the symptoms of compression may disappear, and yet a person with such a lesion of the brain is in danger of becoming epileptic or of developing traumatic insanity, possibly years after the accident has occurred. I have seen cases in which epilepsy has developed years after the brain has been injured. Immediately following a blow to the head certain symptoms may develop which are transitory and due to cerebral disturbance remote from the persisting lesion. If operation is done at once these symptoms may be misleading, and I have known the skull to be opened at a wrong place because too much importance was placed on these temporary symptoms. In one of the cases I report we decided to wait until these temporary symptoms had disappeared, and operation was done later, but at a different place from that indicated by these temporary symptoms. In this and in another similar case the point of operation was chosen where the blow had been received. In one case it was known where the head had been struck, and in the other the place was indicated by hemorrhage in the soft tissues. In neither case was there fracture of the skull, and yet in both a subdural hemorrhage about the size of the palm of the hand was found. In one case that I saw in consultation the patient remained in a semiconscious condition for nearly three weeks. He apparently made a complete recovery without operation, and I have lost track of him, but I fear that he may be in danger of late epilepsy, and I confess that I should feel more comfortable if his skull had been opened where hemorrhage in the soft tissues of the head indicated that a severe blow had been received. I have seen fracture at the base of the skull develop from a fall in which the patient struck on the top of the head, and while I believe that usually the chief injury is at the point where the blow was received I am convinced that it may be distant from this point.

¹ *International Clinics*, 1903, vol. iv., twelfth series, p. 102.

I have seen a case in which persisting word-deafness after an injury to the head was regarded as a sufficiently indicative sign to induce us to have an opening made in the skull over the left first temporal convolution. A depressed fracture that had escaped detection and a large cyst in the temporal lobe were found. The patient made a good recovery, but hallucinations of hearing and delusions developed about a year later, and it became necessary to place him in the insane wards. His paraphasia in great measure disappeared.

Each case must be carefully studied, but in these days of improved cerebral surgery it seems to me wise to recommend operation whenever we have good cause to suspect persisting increased intracranial pressure following an injury to the head.

Concussion of the Brain. In an exceedingly interesting address on concussion of the brain Herbert W. Page¹ expresses the opinion that when severe trauma of the head has occurred fracture of the skull may be of benefit, as the traumatic opening of the cranium permits an escape of blood, and in this way prevents an increase of intracranial pressure. In some cases in which there has been the necessity for surgical intervention and the amount of bone to be replaced or removed has been insignificant, he believes that the chief benefit has occurred from the escape of blood. The onset of high temperature after concussion of the brain is to be regarded as of evil omen, and there can be little doubt that it is due to derangement of the apparatus for heat-adjustment in the brain, and may even be more than suggestive of the existence of cortical lesion.

Page discusses the pathology of concussion. There may be bruising of the cerebral tissue beneath the seat of blow or at the opposite point of the cranial cavity, with hemorrhage here and there. These lesions occur chiefly at the base of the brain, and are inaccessible in this location. Nothing can be done surgically for the punctiform hemorrhages, but for those of larger size operation is possible, although it may be difficult to determine whether such hemorrhage exists and, if it does exist, its exact location. In such circumstances Page believes that the surgeon is surely justified in doing that which in another instance accident might have done for him—make a harmless opening in the skull, if happily thereby, in a matter of life and death, he may find or do something to turn the scale in favor of the one rather than leave the unconscious and helpless sufferer before him inevitably to meet the other. One of the reasons why lacerations of the brain in association with wound and depressed fracture are possibly among the least serious of head injuries is found in the escape of blood through an opening in

¹ Brain, Spring, 1902, vol. xxv., No. 97, p. 1.

both skull and dura. If any of the following symptoms exist after head injury—convulsions, muscular rigidity, rise of temperature, severe pain due to cortical irritation or pressure, not to mention duration of unconsciousness—Page thinks there are real grounds for resorting to operation. He refers to one case in which clonic convulsions began on the fifth day after a fall on the head, and to another in which they began on the sixth day, as these cases show that considerable time may elapse between the receipt of an injury and the onset of symptoms whereby a surface hemorrhage is revealed. He refers, also, to the development of mental disease as a consequence of head injury, and makes this another plea for operation whenever cerebral hemorrhage is suspected.

I feel fully in sympathy with the spirit of this address, and whenever opportunity occurs urge operation if a hemorrhage on the brain as a result of trauma is suspected. When symptoms of such hemorrhage are present surgical intervention should not be postponed, for delay is dangerous. I recall a case in which the surgeon decided to operate, but it was decided to postpone the operation until the next day. The patient died during the night before the day of intended operation, and the necropsy revealed extensive surface hemorrhages as well as hemorrhage within the brain substance. No one can deny that prompt operation might have saved this man's life, although it is doubtful, as the damage done by the hemorrhages was considerable.

Fracture of the Base of the Skull. In an interesting and valuable paper on fracture at the base of the skull, Pearce Bailey¹ shows that the mortality after this accident is about 58 per cent. As might be expected, the symptoms vary in the different cases according to the damage done. The cranial nerve palsies are usually multiple and come on immediately after the injury, or a few hours after, according as laceration or compression by hemorrhage is the determining cause; sometimes, however, they do not appear until several days after the injury, and Bailey does not give any satisfactory explanation for this delay. Paralysis of the olfactory nerve may be the only focal symptom, but this is not a common sign. Injury of the optic nerve is more frequent, and when this nerve is affected the injury is usually in front of the chiasm. Hemianopsia is rare, and the type of contraction of the visual field is not the concentric, as in ordinary atrophies, but a loss of the upper, lower, or particularly the lateral halves of the field. The visual disturbances are mostly unilateral, corresponding to the side of the injury.

After the facial, the motor nerves of the eyes are most frequently paralyzed in fracture of the base, and variations in the pupils are

¹ Medical News, May 16, 1903, p. 918.

common. The prognosis regarding these ocular palsies Bailey says is **good**, as they rarely persist more than a few weeks or months as serious **disabilities**. The most frequent condition of the pupils is inequality. **It seems** probable that the dilated pupil corresponds more frequently **with** the side of the greatest brain injury.

The fifth nerve is seldom paralyzed alone, although occasionally it is **paralyzed** in its sensory distribution in conjunction with other nerves. **The** facial is the nerve most frequently implicated singly in fracture **at** the base. The whole nerve is involved, but most severely in its **lower** branches, and usually the paralysis is temporary.

As injuries to the ear are frequent in fracture at the base, it is very **difficult** to determine whether or not there is a lesion of the acoustic **nerve**.

The extremities are more frequently weak than completely paralyzed. **The** patellar reflexes are often diminished or even lost at first. **Later** they return, and become exaggerated. Convulsions are rare. As a rule, more or less complete coma occurs after fracture at the base, and a large proportion of the patients who die never emerge from the coma. **Profound** and persistent coma is an ominous sign, although Bailey says he has known it to last a week and still be followed by complete recovery. I have known a patient after a severe head injury to remain unconscious between two and three weeks and yet make a complete recovery. Alcoholism undoubtedly, as Bailey says, affects both immediate and ultimate prognosis profoundly. Alcoholic patients are more prone to die because they are more prone to pneumonia, because their heart action is weak, and because in them delirium is more violent, thus preventing them from resting quietly.

It is very important to know what is the condition of those who recover after fracture at the base. Bailey says that recovery, in the sense that the patient becomes as well as he was before the accident, may be looked for in the majority of survivors within a year. In some of these patients retrograde amnesia or loss of memory for certain definite periods of time prior to the accident is permanent; others complain that they do not remember proper names as well as formerly. In a small proportion of cases the patients are left with changes in disposition and character, showing as irritability, quarrelsomeness, fits of anger, spitefulness, etc. Periodic headaches may occur, and there may be a blunting of all the intellectual faculties, manifested as defects in memory and in concentration, which in children might be regarded as feeble-mindedness and in adults as mild dementia. These mental changes Bailey finds more common in the alcoholic and in persons with arterial disease. A year at least is necessary for full restoration after severe injuries; so that a bad prognosis given before that period

may prove erroneous. Bailey thinks that we may conclude, with considerable certainty, that fracture at the base, with its attendant brain injury, is an entirely negligible quantity in the etiology of disabling insanity. This opinion is based upon an examination of cases in the asylums. Although he believes that fracture at the base is an entirely unimportant cause of mental states which make commitment necessary or which render the patients incapable of earning their livelihoods, he does not propose to generalize too freely from this. Fractures at the base he thinks can hardly be compared to those of the vault, with the direct involvement of the cortex in the latter. He promises in another paper to consider the effects of cortical injuries in the etiology of insanity, and we shall await this paper with interest. Fracture at the base causes, as he says, simple concussion of the brain, and his words seem to imply that fractures of the vault, as regards insanity, may have more importance. It is possible that some of the cases of fracture of the base are incorrectly diagnosed, and that to some extent the statistics are vitiated, because often the diagnosis is purely a clinical one.

Encephalitis. Ernst Sträussler¹ has observed two typical cases of hemorrhagic encephalitis with necropsy. Infection is regarded as the most common cause of encephalitis, and yet there was no reason to attribute the disease to infection in the first case, and the spleen was not enlarged. In the second case intoxication seemed probable. Symptoms of gastrointestinal disorder had been present, and the large amount of acetone in the urine was regarded as indicative of disturbed metabolism. It is not the micro-organisms which cause encephalitis, in all probability, but their products; for it has been found that cultures in which the bacteria have been killed may cause encephalitis, and in most cases of encephalitis from influenza bacteria have not been found. Sträussler says that Brie is the only author who has attributed hemorrhagic encephalitis to gastrointestinal disorder, and yet such disorder is very common in cases of encephalitis. Vomiting is an early sign in most cases, but it is difficult to determine whether this is of gastric or cerebral origin. Gastric symptoms—tenderness over the stomach, loss of appetite, and constipation—are frequently mentioned among the symptoms of encephalitis, and cases are known in which encephalitis has followed gastritis. There is a practical conclusion to be drawn from this method of reasoning, and that is the necessity of treating the gastrointestinal disorder in the hope that encephalitis may be prevented or arrested. Sträussler speaks of the mental symptoms caused by autointoxication, and uses them as an argument for his theory of the development of encephalitis from the same cause.

¹ Wiener klin. Wochenschrift, 1902, No. 3, p. 61.

Infantile Cerebral Paralysis with Pseudohypertrophy. It is true, as L. Pierce Clark¹ says, that hypertrophy of paralyzed parts in infantile cerebral palsy is a rare condition. He finds that no special article on the subject exists in literature, and that no illustrative cases have been reported in America previous to those he reports, although search has been made for them. Most of the literature on infantile cerebral palsy refers to the condition while the patients are still in infancy, and, of course, hypertrophy in such cases is not usually present. Most cases of hypertrophy, Clark says, are found in the literature on athetosis, notwithstanding in the twelve recorded cases (five his own) only eight had athetosis. The time elapsing between the formation of the lesion causing paralysis and the detection of the hypertrophy he finds has been from eight to twenty-nine years, the average being sixteen years. The age of the patients at the time the hypertrophy has been recognized ranges from twelve to thirty-six years, the average being twenty-two years. The hypertrophy may involve any and all parts that are paralyzed; even the breast and testicles may enlarge. The skin, muscles, and fat may all hypertrophy in a single case, although some degree of muscle hypertrophy is uniformly present in every case. The enlargement has been in the upper extremities in every case except in one in which the leg was hypertrophic. The arm has shown most enlargement in nine cases, the forearm in two, and the calf in one. The muscles most frequently hypertrophied are in the following order of occurrence: biceps, deltoid, and triceps. Clark further says that the hypertrophied tissues have not been studied carefully from the histological standpoint in any case except in two of his own, and in these true fibre hypertrophy existed. Many of the cases of enlargement of an extremity, he thinks, should be classed as fat hypertrophy, and in such cases the excessive fat appears to be compensatory for the muscular atrophy, as shown in poliomyelitis. This view seems to be confirmed by the fact that the hypertrophic extremity is without exception relatively weaker than its opposite on the healthy side. Clark says bony hypertrophy was first actually proven by him in one of his cases by X-ray examination. The bones of the entire upper extremity may be hypertrophic, although the bones usually enlarged are those corresponding to the hypertrophic soft parts which they underlie. The degree of circumferential enlargement of the hypertrophic extremity varies from one-quarter to seven-eighths of an inch, although not usually more than one-half inch. As in eight cases athetosis was found and was most marked in the hypertrophic parts, it was inferred that the hypertrophy was the result of the violent spontaneous movements.

¹ Journal of Nervous and Mental Disease, November, 1902, p. 641.

Clark has had four cases of hypertrophy in which no athetosis ever existed, but in which a severe partial epilepsy was present instead; so that in all these cases of hypertrophy of muscles in the paralyzed limbs there is some form of involuntary forcible muscular contraction. It does not seem surprising that muscles should hypertrophy if they are made to contract forcibly and frequently, even though the contractions are involuntary, and, therefore, in some of these cases we may expect to find true muscular hypertrophy, while in others the condition may be pseudohypertrophy, and caused by excessive formation of fatty tissue between the muscle bundles.

Internal Hydrocephalus. Internal hydrocephalus resulting from closure of the interventricular passages is very uncommon, but I¹ have been able to obtain two cases of this kind, in one of which the right foramen of Monro was partially occluded by inflammatory thickening of its walls. The right cerebral hemisphere was a mere sac, while the left was normal. Especially interesting in this case was the bilateral contracture of the limbs from this unilateral cerebral lesion. Only a few writers, and those only in France, seem to have paid any attention to the existence of bilateral contracture from unilateral cerebral lesion, and the diagnosis even in the few cases on record was not always confirmed by necropsy. There is some evidence that partial degeneration of the pyramidal tract will cause more intense contractures than complete degeneration of this tract, and in my case the degeneration was only partial.

The second case was one of occlusion of the aqueduct of Sylvius, with dilatation of the ventricular spaces above the aqueduct, but not of the fourth ventricle. The symptoms were very suggestive of cerebellar tumor. The boy, aged nineteen years, had had slight headache and vomiting once or twice a week since he was a child, but in 1901 the headaches became more intense and he began to have a cerebellar gait and vertigo. The patellar reflex was exaggerated on each side. Slight exophthalmos and optic neuritis were present. Other cases of internal hydrocephalus with symptoms of cerebellar tumor are found in the literature; so that it is well to bear in mind the possibility of internal hydrocephalus in every case of suspected cerebellar tumor.

Amaurotic Family Idiocy. This disease is now described in recent text-books, and its symptomatology is pretty generally known, at least by those who keep informed concerning nervous diseases. The most important pathological change is found in the tumefaction of the nerve cells. B. Sachs² has recently studied another case of this disease, and he states that there unquestionably was some increase of

¹ American Journal of the Medical Sciences, July, 1902, p. 44.

² Journal of Nervous and Mental Disease, January, 1903, p. 1.

the neuroglial cells throughout the central nervous system, but the **chief** and most remarkable changes were found in the nerve cells throughout the entire extent of the central nervous system. In the **cortex** as well as in the anterior gray matter of the cord there was not **a** normal nerve cell to be seen. Sachs, therefore, believes that in **amaurotic family idiocy** the morbid process affects primarily, or at least **to a great extent**, the entire gray matter of the brain and spinal cord. The degeneration of the direct and crossed pyramidal tracts is in all **probability** secondary, but is not nearly so great nor so marked as one would expect with such advanced disease of the nerve cells. Sachs believes that a degenerative process does not necessarily represent an **acquired** or an acute affection, and that degeneration will set in whenever normal growth is arrested, but life continues. A child to be afflicted with **amaurotic family idiocy** is born with a limited and restricted capacity for normal development. Its nerve cells may do as well as those of any other child up to the age of two or three or six months, but beyond that its powers for further development will not go. To this extent the disease is a congenital one; when normal development ceases degeneration sets in. Rightly, I think, Sachs says it is inconceivable that so distinct a family affection could be an acquired disease, but even if it were conceivable it must be that toxic or other influences act upon the tissues of deficient embryonal potentiality. Inasmuch as several of Sachs' patients were not nursed by the mother, Hirsch's theory that the toxic influence comes through the mother's milk cannot be maintained.

I have found in two cases exactly such alteration of the nerve cells of the central nervous system as those described by Hirsch and Sachs, and yet my cases were not examples of **amaurotic family idiocy**. The meaning of such cellular alteration we do not know. One or two cases with similar changes have been seen by others.

Sachs has not attempted to establish **amaurotic family idiocy** as an entirely independent disease, and he has contended for nothing more than that this family disease represents a distinct and easily recognizable clinical type. There is no doubt that his position is well taken. He holds that there is a close anatomical relationship between **amaurotic family idiocy** and other cerebral diseases of childhood which are dependent on an arrest of, or at least a disturbance in, the normal development of the central nervous system. He does not assume, however, that the morbid process in all these cases is identical.

Abscess of Pons and Medulla Oblongata. Cassirer¹ has been able to find in the literature sixteen cases of abscess of the pons and medulla

¹ Archiv f. Psychiatrie, vol. xxxvi., No. 1, p. 153.

oblongata, but of these only ten seem to him trustworthy. Two, or possibly three, were cases of abscess of the medulla oblongata; in the others both pons and medulla oblongata, or pons alone, were implicated. Cassirer has made a careful study of the subject in connection with a case observed by himself. A man, who had been healthy, began to have an intermittent fever, and fourteen days after the commencement of the fever the first nervous symptoms became manifest, viz., paræsthesia and diminished objective sensation in the left upper and lower limbs. The hemianæsthesia affected the entire left side, including the face. Two days later right abducens paresis developed and soon became paralysis, and the right facial nerve became paralyzed. Headache was felt occasionally, and optic neuritis was found. Consciousness became gradually impaired. Death occurred twenty-one days after the beginning of the fever, and seven days after the first manifestation of nervous symptoms. Motor power of the limbs and the tendon reflexes were not affected. An abscess was found in the dorsal portion of the medulla oblongata, just below the floor of the fourth ventricle, and extending forward as far as the posterior part of the corpora quadrigemina. The abscess cavity was about thirty-five millimetres long and not over sixteen millimetres wide at any part. The symptoms were explained by the situation of the abscess on the right side of the brain stem. Abscesses were found also in the liver and lungs. An ulcer was found in the vermiform process, and appendicitis was supposed to have existed, although no symptoms of this had been observed, and the purulent process was supposed to have extended from the appendix to the liver, and from here to the lungs and then to the brain, or possibly more directly from the liver to the brain.

Most investigators agree that abscess of the pons and medulla oblongata is of very rare occurrence, and Cassirer seeks to explain why abscess in these portions of the brain is observed so rarely. The amount of tissue is less than in the cerebral hemispheres, and the basal part of the brain is less liable to be the seat of a traumatic abscess. Caries of bone and purulent disease of the various cavities of the skull are frequent causes of abscess of the brain, and those parts of the brain nearest the primary seat of disease are most likely to be affected, and these are usually the parts near the aural and nasal cavities. The situation of metastatic abscesses caused by suppuration in remote regions of the body is not so easily explained. An embolus is likely to be carried into the cortical branches of the left Sylvian artery, and if the embolus is septic a solitary abscess is more commonly in the left cerebral hemisphere than in the right, and in the white substance near the cortex; seldom in the basal ganglia. It is exceedingly difficult to find the embolus causing the abscess. These mechanical conditions do not

explain all abscesses, and it is possible—as some have thought—that certain parts of the nervous system, among which are the pons and medulla oblongata, are more resistant to micro-organisms.

Cassirer also reports a case in which he found minute perivascular abscesses of embolic origin, the emboli having been caused by endocarditis.

Bulbar Palsy. An important paper on the effects of electricity upon the human body has been published by C. K. Mills and T. H. Weisenburg.¹ They have collected many interesting cases from the literature, and I cannot here do more than refer the reader interested in the subject to their paper. Two cases reported by Mills and Weisenburg are deserving of special mention, because of the bulbar symptoms caused by the electricity. A man received a shock of 1000 volts while putting a wire on a telephone pole. He did not fall, and continued his work without difficulty. Two days later he noticed that he could not spit, and soon developed a disorder of speech which gradually became worse. He could always talk better in the morning. Within a short time he had difficulty in swallowing fluid, which at times regurgitated through his nose. The action of his jaws became weak and he could scarcely chew. He had no impairment of hearing, taste, sight, or smell, but could not close his eyelids tightly. His kneejerks were exaggerated, but ankle clonus was not present. When he came to the University Hospital his face was mask-like and wasted. The right eyelid drooped slightly, and the mouth was held slightly open, the lower jaw dropping about half an inch. Partial ptosis was present on the right, and the movements of the right eyeball were limited inward, upward, and downward. The right pupil was larger than the left. The temporal, masseter, and pterygoid muscles were markedly paralyzed and atrophied, as were also the muscles supplied by the seventh nerve. The man could not wrinkle his forehead, close his eyes fully, draw up or down the angle of his mouth, or purse his lips. He was unable to swallow solid food. In taking food he pressed up the floor of his mouth by placing his fingers below the jaw and pushing his head somewhat backward. He could thrust his tongue only as far outward as his teeth; its lateral movements were much restricted, and it was atrophied. Taste was lost on both sides of the tongue. The voice had a nasal tone. There was loss of power in the muscles of the neck which supported the head. The movements of the upper extremities were weak, and the muscles of the neck, arms, and shoulders were wasted. The lower limbs were not distinctly atrophied. The report on the condition of his eyes stated that he had

¹ University of Pennsylvania Medical Bulletin, March and April, 1903.

paresis of the third nerve on the right side and beginning atrophy of the optic nerves.

Unfortunately a necropsy could not be obtained in this interesting case, although death was not long delayed. Speculation regarding the lesions is almost useless, but one might think of functional or organic changes in the motor cells of the pons, medulla oblongata, and spinal cord produced by the electricity.

Another equally important and similar case is included in this paper by Mills and Weisenburg, but in the second case considerable improvement occurred, although it is not stated whether the man ultimately recovered or died.

The medico-legal considerations which Mills and Weisenburg add to their report should be read in the original paper by those interested in this subject.

Meningitis. Under this heading I shall place both the cerebral and spinal form of this affection.

TUBERCULOUS MENINGITIS A peculiar form of tuberculosis implicating the nervous system has been observed by Thorpe and Grazebrook.¹ The symptoms pointed to a lesion in the lower part of the lumbar region of the spinal cord and of the cauda equina. There was complete paralysis of the bladder and rectum, and the patient complained of numbness of the scrotum and left leg, an aching pain in the back about the lumbar region, and inability to stand. All the reflexes of both lower limbs were entirely abolished, and ankle clonus could not be elicited. Partial paralysis existed, most marked in the left leg, and sensation was dulled in the toes of both feet. Both lower limbs could be fully extended without lordosis resulting. There was no stiffness or rigidity of the spine, and the patient could turn from side to side without pain. No history of syphilis was obtainable, and there was no evidence of disease of the spinal column. The symptoms were of acute development, and with elevation of temperature. At the necropsy a large abscess was found in the left psoas muscle, extending from the lower border of the second lumbar vertebra to two inches below the brim of the pelvis, but not reaching Poupart's ligament. Pus was found in the spinal canal pressing on the membranes covering the cauda equina. No sign of caries of the vertebræ could be elicited, and the first four lumbar vertebræ were removed and carefully dissected without discovering any evidence of disease. The cauda equina appeared to be healthy, and there was no pus within the membranes. There did not seem to be any disease of the hip-joint or of the ilium, nor did the sacroiliac synchondrosis appear to be affected.

¹ Lancet, March 28, 1903, p. 879.

The explanation offered for the lesions found in this case is remarkable. The patient had had typical signs of acute myelitis in the region of the lower part of the spinal cord and cauda equina. He had no history and no signs of tuberculosis, and at the necropsy the cord and its membranes appeared to be healthy. Caries of the vertebral column, as the cause of the large psoas abscess, could not be found, and so the following theory is advanced to account for the phenomena, viz., that the abscess in the iliopsoas muscle was due to the caseation and subsequent softening of innumerable miliary tubercles deposited in its substance, similar to what had taken place in the various organs of the body, and that this tuberculous pus, instead of finding its way toward the surface beneath Poupart's ligament or other of the usual positions of pointing, had followed the course of the lumbar nerves and had penetrated into the spinal canal through the intervertebral foramina, there setting up symptoms of pressure myelitis. The authors could find no such theory mentioned in literature, but they believed that it was reasonable, and there seems to be no good reason why the extradural pus should not have reached the spinal canal in the manner described. External tuberculous spinal pachymeningitis without caries of the vertebræ is known to occur, and when an abscess in the region of the affected dura is found it is quite possible that this abscess was the cause of the pachymeningitis. However, external spinal pachymeningitis may occur without apparent caries of the vertebræ, and the manner of its formation may be impossible to determine, as in the case reported by Mills and myself, referred to a little further on.

As Thomalla¹ says, tuberculous meningitis a few years ago was regarded as incurable, but lumbar puncture has shown that persons with symptoms of meningitis may have the tubercle bacillus in their cerebrospinal fluid and yet recover. Such a case is reported by Thomalla. A man, whose parents had died from tuberculosis, had tuberculosis of different organs and later developed symptoms which made a diagnosis of tuberculous meningitis possible. A lumbar puncture does not seem to have been made, but tubercles were found in the choroid. Complete recovery occurred. Money has found tubercles in the choroid in twelve cases out of forty-two of tuberculous meningitis. It seems to be the general opinion, according to Thomalla, that the appearance of cerebral symptoms in association with tubercles in the choroid permits a positive diagnosis of tuberculous meningitis to be made. Proper nourishment, creosote, and iodide of potassium were the means employed in the treatment of Thomalla's case. The creosote was supposed to kill the bacilli and the iodide of potassium to aid in

¹ Berliner klin. Wochenschrift, June 16, 1902, No. 24, p. 565.

the resorption of the poison eliminated by the bacilli. He seems to have much confidence in creosote, and gave it to his patient in large amount.

Alfred Gross¹ also has seen healed tuberculous meningitis, but only in the fluid obtained from one lumbar puncture could tubercle bacilli be found, and they were very few in number. The symptoms of meningitis in this case began acutely after injury to the head, and it is supposed that in such cases the trauma makes a latent tuberculous meningitis manifest, possibly by transudation of fluid.

The case of R. Cruchet² is an important contribution to tuberculous meningitis, as regards the long duration and the apparent cure. A child, aged eight years, entered the hospital in October, 1900, with signs of meningitis, viz., stupor, photophobia, headache, hydrocephalic cry, vomiting, constipation, irregularity of pulse, general hyperæsthesia, etc. The father of the child had died of tuberculosis. The child had had repeated attacks of bronchitis, and the apex of the right lung was suggestive of tuberculosis. The signs of meningitis became gradually less, so that after four or five weeks they had disappeared. The child appeared to be in excellent health until August, 1902, when another attack, very similar to the first, developed. In this attack the right side of the tongue was paralyzed. By the end of the following September, nearly two months later, the child had again recovered, except that the right side of the tongue remained paralyzed. No wonder that the diagnosis in this case was uncertain until a third attack occurred shortly after the second and caused death. Tuberculous meningitis was found, and the right hypoglossus was compressed by tubercles and by the thickened vertebral artery. A remission of almost two years, simulating complete recovery, is most uncommon in tuberculous meningitis, but it is well for us to remember that it is possible.

External Spinal Pachymeningitis. External spinal pachymeningitis, except the tuberculous variety of limited extent, is uncommon, and with the exception of the case reported by Mills and Spiller³ there is probably none on record in which the entire ventral surface of the spinal dura from the foramen magnum to the caudal end of the dural sheath was adherent to the bodies of the vertebræ by fibrous proliferations, and the rest of the spinal dura was normal. This, however, was the condition in the case reported by Mills and Spiller. The patient, a man, aged forty-two years, had a gradually developing spastic paraplegia of the lower limbs. At the necropsy the dura was found firmly adherent to the bodies of the vertebræ by fibrous proliferations, and

¹ Berliner klin. Wochenschrift, August 18, 1902, No. 33, p. 776.

² Revue Neurologique, November 30, 1903, p. 1077.

³ Brain, 1902, vol. xxv., No. 99, p. 318.

the thoracic region of the spinal cord was intensely degenerated, partly as a result of implication of posterior roots, and partly, probably, as a result of interference with the circulation. The cervical and lumbar regions presented a degeneration chiefly secondary to that of the thoracic region, except that in the lumbar region the posterior roots were partly diseased. It is impossible to determine the cause of this external spinal pachymeningitis, but it may have been syphilitic, and yet it was very unlike the lesions usually produced by syphilis. The case adds one more to the many causes of spastic paraplegia of the lower limbs.

Reflexes. T. H. Weisenburg¹ has studied the reflexes and nerve and muscle phenomena in the distribution of the fifth and seventh nerves. He finds that Overend and v. Bechterew are correct in saying that the *ophthalmic or supraorbital reflex* can be obtained by irritating not only the supraorbital distribution, but also the entire frontotemporal region and nearly the whole face, but, according to Weisenburg, irritation in so extensive areas does not produce the same fine tremor but a coarser contraction, which is somewhat different from the reaction caused by irritation over the supraorbital region. On tapping over the face there is nearly always a greater approximation of the lids, undoubtedly a voluntary action. The fibrillary reflex is obtained by tapping over the frontal region as far as the border of the hair, the exaggerated form by tapping as far back as the vertex.

This reflex has almost the same value as the reflex closure of the lids from irritation of the eyeball, as I have noticed; but I have observed also that the ophthalmic or supraorbital reflex is a more delicate form of reflex, and in some cases may be more easily obtained when the sensitiveness of the ocular conjunctiva is diminished. It should be of more value, also, in cases of hysterical anæsthesia of the conjunctiva.

In twelve cases of *peripheral facial palsy* Weisenburg found no contraction in the orbicularis palpebrarum on the affected side, while a distinct tremor was produced in the corresponding muscle of the sound side of the face.

The *lacrymal reflex* is one to which I have called attention as a valuable means of diagnosis between hysterical and organic anæsthesia of the face, as in the latter the secretion of tears is not obtained by irritation of the mucous membranes of the eyeball and nostril, preferably that of the latter. Weisenburg found the flow of tears to be diminished on the anæsthetic side in three cases of hemiplegia and hemianæsthesia. In a case of hysterical anæsthesia of the left side of the face the reflex was preserved. In a case of hemianæsthesia that had been variously

¹ University of Pennsylvania Medical Bulletin, April, 1903, No. 2, p. 63.

diagnosed as organic and hysterical by different neurologists, the flow of tears was diminished, as would be expected in an organic case.

Weisenburg, in testing for the *cornea mandibular reflex*, has found it present only in fifteen cases out of 112 of organic disease. He thinks it bears no definite relation to any lesion. The reflex is shown by movement of the lower jaw to the side opposite the irritated cornea, and is produced only by irritation of the cornea. This and the Chvostek, the malar, the risorius, and the depressor labii inferioris phenomena are of doubtful diagnostic importance. *Chvostek's sign* is common in *tetany*, but in this country tetany is an exceedingly rare disease. The sign consists in a quick contraction of the facial muscles of one side when a slight tap is given over the facial nerve of the same side beneath the ear. It is found sometimes in normal persons. The *malar phenomenon* described by v. Bechterew is an upward and backward movement of the corner of the mouth produced by percussing the area over the malar bone, and is regarded by v. Bechterew as a true reflex. Weisenburg believes the phenomenon is not constant, and he obtained the sign usually when Chvostek's sign was present. Inasmuch as it is usually associated with the latter, he concludes that it may be only a part of this sign.

The *risorius phenomenon* is the retraction of the corner of the mouth backward and slightly downward by the contraction of the risorius muscle when percussion is made over the angle of the lower jaw. The *depressor labii inferioris phenomenon* is a retraction downward of one side of the lower lip on percussing over the side of the lower jaw, about an inch and a half back of the symphysis. It also is probably a part of the Chvostek sign.

A. Bickel¹ has observed in many persons without nervous disease, in whom the Babinski reflex is negative while they are awake, that this reflex becomes positive when they are asleep. This is not true in every case. So, also, in chloroform narcosis he has found that the Babinski reflex may become positive in persons without nervous disease, although the reflex is negative when they are not under the influence of chloroform. It seems, therefore, that inactivity of the cortex, of purely functional nature, may suffice to make a Babinski reflex positive in many cases, although not in all.

Oppenheim² says that if one strokes with the handle of the percussion hammer along the inner side of the leg below the knee at the posterior border of the tibia in a healthy person, flexion of the toes occurs, or else the foot and toes remain immovable; but the great toe is extended

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxii., Nos. 1 and 2, p. 163.

² Monatsschrift f. Psychiatrie und Neurologie, November, 1902, p. 421; December, 1902, p. 518

and the foot is abducted or adducted in a person with spastic paraplegia or hemiparesis. Usually the extensor hallucis longus is the first to contract, then follows the extensor digitorum communis, and, finally, the peronei. If the rigidity of the limb is too great the reflex is prevented. Oppenheim does not believe that he has established the constancy of this phenomenon; indeed, in some cases of infantile spastic hemiplegia, especially with athetosis, he has not obtained it. This phenomenon resembles very closely the Babinski reflex, and yet Oppenheim has observed it in cases in which the Babinski reflex was not present.

STRUMPELL'S TIBIALIS PHENOMENON. A short time ago Strümpell published a paper in which he attributed great importance to the tibialis phenomenon, viz., contraction of the tibialis anticus when the thigh is flexed voluntarily on the trunk. The presence of this sign, according to Strümpell, indicates an organic disease of the brain or spinal cord, and especially of the pyramidal tract. It was desirable that the correctness of this statement should be carefully tested, and this has been done by E. Flörshiem.¹ I shall not give in detail the investigations made by him, but merely his results. He shows that Strümpell has gone too far; that the phenomenon may be absent in lesions of the pyramidal tract, and may be present, though rarely, in organic lesions, without implication of this tract, in functional diseases and when no nervous disease exists. The sign has little diagnostic value, and when present other signs of lesion of the motor tract are pronounced. This is unfortunate, because the sign promised to be of diagnostic value.

LOSS OF REFLEXES IN TRANSVERSE LESIONS OF THE CORD. M. Bartels² reports a case of compression of the spinal cord at the fifth thoracic segment, of four months' duration, with lost reflexes. The destruction of the cord at the compressed area was not complete. He was able to find by the Marchi method degeneration of the posterior roots, chiefly in their intermedullary portions, in the lumbar region. This degeneration he attributes to the increased pressure of the cerebrospinal fluid. He refers to Brauer's case, in which the tendon reflexes were exaggerated, although the spinal cord in the thoracic portion was entirely destroyed in one and one-half centimetres of its length. The case of Bartels makes the cases in which disappearance of the tendon reflexes occurred from transverse lesions of the spinal cord above the lumbar region of questionable value, unless the lumbar region in these cases was examined by Marchi's method. The case of Kausch, to which Bartels also refers, likewise throws doubt upon the value of

¹ *Monatsschrift f. Psychiatrie und Neurologie*, November, 1902, p. 423.

² *Neurologisches Centralblatt*, May 16, 1902, p. 438.

these cases. Laminectomy was done upon a girl with compression myelitis and exaggerated reflexes. The spinal cord was completely torn across during the operation. The patellar reflex was absent during sixteen hours after the operation and then returned, and remained during several months until near the time of the death of the patient. The loss of the tendon reflexes from transverse lesions of the spinal cord above the reflex arcs becomes more easy to comprehend if we accept the teaching that the reflex arcs are always diseased in such cases, but with our present knowledge that would be assuming too much.

INFRASPINATUS REFLEX. Under the name of "infraspinatus reflex" Steiner¹ describes the outward rotation of the arm and extension of the forearm when a blow is given with the percussion hammer at a point on the scapula diagonally two to three centimetres away from the junction of the spine of the scapula with the inner border of the scapula. This is described as a hitherto unrecognized reflex, but is nothing more than the reflex already described by Pickett.

PUPILLARY REFLEXES. The "myotonic pupillary movement," as it is called by A. Saenger,² consists in the persistence of the contraction of the iris for several minutes after the cause of the contraction has been removed. In one of Saenger's cases the iris on each side did not react to light, but in convergence and accommodation it contracted slowly, and remained a half to five minutes contracted and then gradually relaxed. On one occasion the contraction persisted ten minutes. The contraction of the iris was not so great by energetic closure of the eyelids. The light reaction was absent. It was very remarkable that in this case the patient had a sensation of dilatation of the iris, and during the contraction she had a sensation of spasm amounting to frontal pain. Saenger believes that the cause of the phenomenon was not central but peripheral, and situated in the iris, and that the condition was analogous to the myotonic disturbance of Thomsen's disease. This "myotonic pupillary movement" has been seen in tabes and parietic dementia, and has been seen also by Strasburger and by Piltz as well as by Saenger.

The cases of "myotonic" reaction of the iris reported by Nonne³ differ somewhat from those previously described in the literature. In one of his cases the right pupil was six millimetres wide and the iris did not contract to light or in accommodation, while in convergence it contracted forcibly but slowly, and the pupil became pinhead in size. The dilatation occurred very slowly, and it was more than five minutes before the right pupil became the size of the left, which was not affected. Unlike most cases in which the "myotonic" reaction is observed both

¹ *Neurologisches Centralblatt*, September 16, 1902, p. 840.

² *Ibid.*, p. 837.

³ *Ibid.*, November 1, 1902, p. 1000.

in convergence and accommodation when there is rigidity of the iris to light, the phenomenon in Nonne's case was seen only during convergence. The case was not one of spinal-cord disease or syphilis, but the patient had diabetes. In another case reported by Nonne there was neither spinal-cord disease nor syphilis, but the sign was the result of chronic alcoholism.

PARADOXICAL PUPILLARY REFLEXES. J. Piltz¹ has made a careful study of the pupillary phenomena known as paradoxical, and has examined critically all the cases he could find reported in the literature. He concludes that there are different forms of paradoxical reaction.

1. The paradoxical accommodation reaction of the pupil—*i. e.*, contraction of the pupil in fixation of a distant object and dilatation of the pupil in fixation of a near object while the illumination of the eye remains the same. This phenomenon has been observed by Vysin, and has been called by him perverse pupillary reaction. It was seen by him in two cases of functional nervous disease.

2. The pseudoparadoxical reaction of the pupil, depending on a lesion of the iris. The contraction of the iris under the influence of light causes a dilatation of the pupil by enlargement of the coloboma, and simulates in this way the paradoxical light reflex of the pupil. This has been observed in only one case.

3. The true paradoxical light reaction of the pupil. This consists in dilatation of the pupil under exposure to light and contraction in darkness. He makes three sub-forms: (a) the dilatation from light without previous contraction; (b) the dilatation from light following immediately after a contraction, and (c) contraction of the pupil by shading the eyes without previous dilatation.

True paradoxical reaction to light is very rare, and may be simulated by convergent, divergent, and accommodation reaction of the pupil; by hippus of the pupil; by the reaction to warmth or the sympathetic reaction of the pupil, or by the orbicularis reaction of the pupil—*i. e.*, contraction of the pupil on forcible closure of the lids. According to Piltz there are only five satisfactory observations reported of the true paradoxical reaction of the pupil to light. This phenomenon is almost invariably associated with severe organic disease of the nervous system.

DISEASES OF THE SPINAL CORD.

Sensory Tracts in the Spinal Cord. A case reported by Adolf Meyer² seems to be a valuable contribution to the study of the course

¹ *Neurologisches Centralblatt*, Nos. 20, 21, and 22, 1902.

² *Journal of Nervous and Mental Disease*, December, 1902, p. 715.

of sensory fibres in the spinal cord. The entire cross-section of the spinal cord from the fourth thoracic to the sixth thoracic segment was destroyed, with the exception of the dorsal two-thirds of the posterior columns and a few pyramidal fibres. Clinically the case presented for probably two years before death normal tactile sensibility, normal pressure sense, normal tickle sense, and normal sense of position; analgesia and thermoanæsthesia below the sixth rib on the right and below the fifth rib on the left side; a zone of slight thermohyperæsthesia over the fourth rib, etc. The importance of this case seems to lie in the fact that tactile sensation and sense of position were normal and the greater part of the posterior columns was preserved; therefore, the fibres conveying these two forms of sensation are situated probably in the posterior columns. It could be argued similarly from this case that the fibres of pain and temperature must be situated in the lateral columns, inasmuch as these senses were lost and the lateral columns were destroyed. Meyer refers to a case reported by Gowers, in which the ventral two-thirds of one side of the cord were destroyed and sensibility to pain on the opposite side of the body was lost without impairment of tactile sensibility. He refers likewise to a case reported by Müller, in which the parts were severed which were intact in Gowers' case—i. e., both posterior columns and one-half of the cord—and in this case tactile sensation was lost on both sides and pain sense on the side opposite to the lesion, so that it would appear that the tactile sense was represented in the posterior columns and the pain sense in the lateral column. Equally valuable is the case of syringomyelia reported by Dercum and myself, in which the cavity in the cervical region was confined to one posterior horn and tactile sense was normal, while pain sense and temperature sense were much affected. While I believe that tactile sense is largely represented in the posterior columns, it is possible that it is partly represented in the lateral columns, and my reasons for this belief are given elsewhere in this review.

Tabes. Joseph Collins¹ has recently written an excellent clinical paper on tabes, having had 140 cases carefully studied on which to base his conclusions. Of these, 124 were men and 16 were women; the difference in sex, therefore, is very striking. Of the men, 78 were married, 12 were widowers, and 34 were single. Of the women, 6 were married, 4 were widows, and 6 were single. Inasmuch as syphilis is considered the chief cause of tabes, it is worthy of comment that 78 of the men were married. Are we to conclude that more married men contract syphilis than single men? This is hardly warranted, because tabes may develop eight or nine years, or even later, after syphilis has

¹ Medical News, January 3 and March 14, 1903.

been acquired, and the patient may have married within that time. The average age at which the symptoms first appeared was thirty-eight and one-half years. The youngest patient was a boy, aged eighteen years, who had been exposed to syphilis. Among the 140 cases there were 4 negroes; 85 of the 124 male patients, or 68 per cent., gave a definite history of syphilis. Of these, 46 recalled the occurrence of secondary manifestations and gave a description of them. In 19 other patients a previous luetic infection seemed probable, and if these are admitted to the list the percentage of syphilitic patients in the series is 83. Of the 85 male patients who gave a history of syphilis, the specific infection was said to be slight in 80. In 5 only was there recollection of attending or sequential symptoms which would entitle it to be called severe. Collins' cases support the opinion held, I think, by most neurologists, that the danger of contracting tabes is in no sense proportional to the severity of the syphilitic manifestations.

One point especially that Collins makes is interesting. He says it is well known that the cases of tabes with early optic atrophy are almost invariably in patients who give a history of syphilis. It is also interesting that in Collins' cases antisyphilitic treatment did not prevent and did not delay the development of tabes. The cases in which the treatment was carried out most carefully developed tabes as early or earlier than those in which the treatment had been incomplete. Collins thinks that tabes is an uncommon disease in women in this country, but is becoming more frequent. As women force their way into the professional, political, and social arena formerly usurped by men, so in proportion do they fall victims to the diseases associated with civilization. If this view of the matter is correct women are paying a high price for their "emancipation," but it has been my experience that tabes is not so common in women as in men, even in foreign countries.

Collins' cases lend little support to the theory that trauma may cause tabes. Only one case seemed to have any bearing on this subject, and in this he was unable to satisfy himself that the injury had anything more to do with the disease than that of hastening the development. He accepts syphilis as the chief cause of tabes, but why in some cases it produces tabes and in other cases does not neither he nor anyone else can tell us. It is unknown, also, in what way syphilis leads to tabes. Collins has found that pain was the initial symptom in 51 of his cases, or 40 per cent., but it was a common sign at some period of the disease and was present in 126 of the 140 patients, and in these 126 patients the pain was predominantly in the lower extremities in two-thirds of the cases. Visceral crises occurred in 20 of the 140 cases—*i. e.*, in 14 per cent.—and in 6 of these 20 cases the gastric crises were the initial symptoms. Paræsthesia was noted in 103 of the 140 cases—*i. e.*, in

73 per cent. A girdle sensation was recorded as present in some degree in 46 cases, and as not present in 59—*i. e.*, it existed in 45 per cent. of the cases in which it was certain that definite inquiry was made. Disturbance of tactile sensibility was noted in 67 per cent. of the cases. Analgesia was noted in 58 per cent. of the cases, and was most common in the distributions of the ulnar and peroneal nerves. In the 73 cases in which the muscular sense and the sense of position were tested impairment was noted in 63 per cent. In 57 cases in which an examination for hypotonus was made, this sign was found in 41, or 72 per cent. As a rule, it was more pronounced in cases in which the disease had existed for some time. Ataxia was present in 102 cases, or in 73 per cent. Romberg's sign was noted in 117 cases, or in 85 per cent. Ataxia of the upper limbs was noted in 48 cases, or in 34 per cent., and began suddenly in 10 per cent. of the cases. In 118 cases the knee-jerk was absent, and in 14 cases it was impaired, so that in 94.4 per cent. it was affected. The absence of the Achilles-jerk was noted in a greater percentage of cases than the knee-jerk; it was absent in 107 cases, or 88 per cent., whereas the knee-jerk was absent in 84.3 per cent. of the 140 cases. The Argyll-Robertson pupil was present in 77 per cent. of the cases. In view of the fact that ocular palsies are stated in the text-books and in many monographs to be comparatively frequent in tabes, it is important to note that Collins found them only in 15 per cent. of his cases, and if the cases of mild ptosis are excluded such palsies occurred only in 10 per cent. Optic atrophy Collins found in 19 of the 140 cases, or in 14 per cent. He has not been able to observe that early optic atrophy has any tendency to arrest the development of the tabetic symptoms. This seems remarkable, because this arrest has been seen by a number of observers, and in my experience it is a well-established fact, at least in many cases. The optic atrophy must occur early or it seems to have little influence on the development of the disease. Collins has not found bladder symptoms so frequently as most clinicians have. He noted them only seventy-eight times—*i. e.*, in about 55 per cent.—and he thinks that the explanation may be sought in the fact that a considerable number of his cases were seen in the early stages of the disease, and that vesical disorders, although the initial symptom in from 10 to 20 per cent. of the cases, do not attract the attention of the patient until after they become more intense. Arthropathies occurred in only 5 per cent. of the cases. In 2 of Collins' cases a herpetiform eruption developed on the buttocks. This must be a rare sign of the disease. I have recently observed a patient under the care of Dr. J. H. Musser in whom a herpetiform eruption would develop on the outer part of one thigh after severe pain in the part. The patient had learned to regard the

appearance of this eruption as a sign of cessation of the pain, but as such a sign it sometimes failed. Collins observed muscular atrophy in 18 cases, insomnia in 21 cases, and vertigo in 5.7 per cent. of his cases. In a few cases there were mental symptoms, such as mild dementia, inertia, and loss of power of concentration. I have in this review selected only those symptoms for mention that seemed to me most important.

Byrom Bramwell¹ has analyzed 155 cases of *tabes dorsalis* occurring in private and hospital practice; 140 were males and 15 were females. The great preponderance of the male sex in this disease is shown by the analysis of 2275 cases by different investigators, 91.3 per cent. being males. In 112 of Bramwell's cases the disease began between the ages of thirty and fifty, and from the studies of others this has been shown to be the most common period for the development of the disease. Bramwell has found that married men are more liable to *tabes* than single men. His cases also show that syphilis is a very common cause of *tabes*, but syphilis is not, in his opinion, the only cause. The etiology of *tabes* is a much more complicated question than some writers have supposed, according to Bramwell, and, in different cases, the rôle which the three great factors—(a) original constitution or vulnerability of the nervous system; (b) syphilis; (c) cord strain or irritation—play in the production of *tabes* varies considerably.

In 235 cases studied by different men the time between the chancre and the first symptoms of *tabes* was one to five years in 43 cases; five to ten years in 59; ten to fifteen years in 52; fifteen to twenty years in 48; twenty to twenty-five years in 19; twenty-five to thirty years in 13, and more than thirty years in 1. From these figures it may seem that anyone who has acquired syphilis is liable to *tabes* many years after the infection, and thorough and early antisyphilitic treatment does not in all cases, at all events, prevent the subsequent development of *tabes*, as shown by Bramwell and others. In his opinion lightning pains are by far the most frequent of all the symptoms and signs of *tabes*, and are the most common initial symptom, and are most commonly in the lower limbs. The girdle sensation is much less common; it was present in 68.2 per cent. of Bramwell's cases. Some form of paræsthesia was present in 66.4 per cent. of his cases. He has found that in many cases in which ataxia was very marked the patients could walk much better in India-rubber soles or heels than in ordinary shoes. Sticks tipped with India-rubber, he says, are much better than sticks with iron ferrules for those ataxics who require canes. In 127 cases the knee-jerks were lost; in 20 cases the knee-jerks were present

¹ Brain, 1902, vol. xxv., No. 97, p. 19.

either on one side or both, and in 8 cases the condition of the knee-jerks was not mentioned. In 5 cases the knee-jerks were exaggerated, and these he says were cases of true tabes, but he does not state that the diagnosis was confirmed by necropsy. It is well, I think, to be skeptical regarding exaggeration of the knee-jerks in tabes. It would be inadvisable to refer here to all the symptoms in these 155 cases, and it is not necessary. At the end of Bramwell's carefully prepared paper a table is given showing the frequency and percentage of the chief symptoms in his cases.

EARLY SIGNS OF TABES. It is exceedingly important to recognize tabes in the initial stage, and S. Goldflam¹ has attempted to ascertain the earliest symptom of the disease, and has found that the characteristic pains are often the earliest symptoms. In one case, for example, the pains existed more than ten years without other symptoms, and then reflex rigidity of the iris, loss of Achilles-jerk, and disturbance of cutaneous sensation made the diagnosis positive. The pains in rare cases may not be felt, or, more commonly, may be slight, but absence of both pains and paræsthesia Goldflam regards as extremely uncommon. The pains are sometimes accompanied by fever, or they may alternate with gastric crises. According to Goldflam, they are the most characteristic symptom of tabes, and in the typical form do not occur in other diseases. I may object to this so far as to say that in my experience the pains of spinal syphilis may have considerable resemblance to those of tabes.

Loss of the Achilles tendon reflex may occur before loss of the patellar reflex, and, therefore, may be an early and valuable sign of tabes. Goldflam has called attention to the importance of this reflex in clinical medicine, and I can confirm the observations of Babinski, Biro, and others that this reflex is not infrequently lost in sciatica. The Achilles tendon reflex has much the same importance as the patellar reflex.

TABES FOLLOWING TRAUMA. That tabes may be caused by traumatism has been much doubted, but every now and then a case suggestive of such an etiology is reported, the chief argument being the old one of *post hoc ergo propter hoc*. Strauss reports a case of the so-called traumatic tabes, and considers it very important that the patient was carefully examined by a physician a year and a half or two years before the appearance of tabetic symptoms, and that at that time no signs of latent tabes were discovered. A difference in the size of the pupils did exist then, but as this may be found in non-tabetic persons Strauss regards it as of little importance. The symptoms of tabes were first detected on the side of the body that had been injured. The patient

¹ Neurologisches Centralblatt, September 1, 1902, p. 786.

fell a distance of about one metre and struck first on his left leg. A year and a half to two years passed after the accident before tabes was detected. Most men will acknowledge probably that this case does not prove the existence of traumatic tabes, and it is interesting to read the discussion of the physicians who were present when the case was presented. It is sometimes a matter of medico-legal importance to decide whether the symptoms of tabes developing after a trauma could have been caused by the trauma.

Oppenheim has found as the only sign of tabes an anæsthesia of the trunk in the mammillary region, or analgesia of the legs, and no one will dispute that these signs often are not even searched for. In almost all of the cases of so-called traumatic tabes that Oppenheim has seen he was able to show that some symptoms of tabes had existed before the trauma occurred. He is, therefore, very skeptical regarding the existence of traumatic tabes. Some ocular disturbance is a common sign of early tabes. In most of the cases of so-called traumatic tabes the symptoms have been most distinct in the injured part. Oppenheim has seen ataxia and disturbance of sensation most pronounced in an upper limb which had been injured. In cases of head injury ocular symptoms, as ocular atrophy, have been prominent, but in these cases tabes had existed before the trauma occurred. It seems, therefore, that a trauma may hasten the development of tabes or even determine to some extent the symptoms, but that does not mean that it may cause tabes, and yet Oppenheim does not positively deny the existence of traumatic tabes. He considers the inequality of the pupils of more importance as a sign of tabes than Strauss does. The wife of Strauss' patient had no patellar reflex, and in the opinion of Bernhardt and Oppenheim there was ground for the suspicion of a previous syphilitic infection in both husband and wife—an opinion which seems justifiable, for while loss of the patellar reflex in the wife and tabes in the husband do not prove the existence of syphilis, they strongly suggest it.

Strauss'¹ case, like all others of so-called traumatic tabes, simply shows that trauma has some relation to tabes, but does not show any causal relation.

Oppenheim referred to the examination by a physician at the time of the trauma, upon which Strauss had laid so much importance, and he remarked that some of the early symptoms of tabes may readily escape detection, and may be found only after a thorough examination, which is not made by every physician.

Paul Jacob reported a case which he regarded as another example of traumatic tabes.

¹ Berliner klin. Wochenschrift, June 30, 1902, p. 621.

ARGYLL-ROBERTSON PUPIL. Dejerine¹ believes that the Argyll-Robertson sign occurs almost only in syphilitics, although Babinski is more radical, and believes that it occurs only in those who have contracted syphilis. Dejerine has observed this sign in the interstitial hypertrophic neuritis, described by himself, in cases in which syphilis did not exist. He refers to a young man, aged twenty years, reported by him, who had this neuritis with the Argyll-Robertson sign, and certainly had neither acquired nor inherited syphilis. Dejerine has found the sign in the Charcot-Marie type of muscular atrophy, or at least he has found a slowness of the iritic response to light amounting almost to rigidity. Marie and Raymond do not appear to accept the statement that the Argyll-Robertson sign may occur in the Charcot-Marie type of muscular atrophy, as each report two cases of the type in which the light reflex was preserved. It is well to remember that Dejerine says the sign *may* occur in the Charcot-Marie type, but he does not assume that it is common. Inasmuch, however, as it appears to be a rare sign in a rare disease, it probably will not be of great practical importance.

INVOLUNTARY MOVEMENTS IN TABES. Involuntary movements are not very uncommon in tabes, and are mentioned in text-books. J. H. W. Rhein² has found that they have not excited much attention on the part of English and American observers. In Rhein's case clonic spasms of the extensors of the toes, especially on the right side, were observed. All the anterior tibial group of muscles seemed to be involved, and the contractions were distressing though painless. They were very different from the sudden violent contraction of the leg muscles common in tabes which are often associated with sharp pain. The spasm lasted irregularly for hours, and appeared more frequently during the night. The contractions were slow, about two to a second, and rhythmical. Sometimes days would elapse between the spasms. Rhein has found that these involuntary movements of tabes are most frequently seen in the hand and fingers, though they are present also in the toes and feet, in the muscles of mastication, and in the tongue. The little and ring fingers are usually first to be involved, but the middle finger may be affected or some movement of the hand, such as rotation, supination, flexion, or extension may be the first to be observed. Though they are involuntary movements, they may be partly controlled by great effort of the will. According to Hirschberg, they are not a complication of tabes, but a manifestation of inco-ordination. They are more pronounced when the eyes are closed.

¹ *Revue Neurologique*, July 15, 1902, p. 629.

² *Journal of Nervous and Mental Disease*, July, 1902, p. 422.

Neurologists are familiar with these involuntary movements in **tabes**.

SLOWNESS OF RESPIRATION IN TABES. Slowness of respiration has recently been observed by Max Egger in a case of tabes.¹ The **brachypnoea** in this case had existed at least four years. The average was about four or five respirations per minute. After eating, seven or eight respirations per minute were counted during two or three hours. The observation of strangers also increased the frequency. Muscular exercise, however, did not have this effect. The respiration was the same as that of a dog in which both pneumogastric nerves have been cut. The pneumograph of Verdin showed that the pause was really a very gradual rise in the line, and that this was followed by an abrupt rise. Vomiting, roughness of voice, tachycardia, etc., were present in the patient, as they are also after lesions of both pneumogastrics, so that Egger believed that in this case both of these nerves were diseased. Dejerine, from whose clinic the case was reported, said that he had never previously observed slowness of respiration in tabes.

ARTHROPATHIES IN TABES. Arthropathies of the spinal column in tabes occur so rarely that very little concerning them is to be found in the literature. A typical case has come under my observation.² The patient was a woman, who for many years had had sharp pains in her lower limbs. She had disturbance of gait and staggered and was obliged to use crutches. Her right shoulder became swollen and useless. She had had incontinence of urine, and of feces if she took a laxative, and was constipated if she took no medicine. The patellar and Achilles tendon reflexes were absent. She had an arthropathy of the left ankle and probably one also of the left knee. These, with other symptoms, made the diagnosis of tabes as certain as a clinical diagnosis ever can be, and the case is interesting chiefly on account of the arthropathy of the vertebral column. About four years ago she first noticed that her spinal column was becoming deformed. She has now pronounced scoliosis and lordosis in the thoracolumbar region, and this deformity is said to have developed gradually. The right hip is raised considerably higher than the left when the patient is sitting, on account of the deformity of the vertebral column.

Oppenheim has referred to cases of arthropathy of the spinal column reported by Kroenig and by Abadie. The condition was known also to Charcot and P. Marie. It is probable that in some of these cases fracture of the vertebrae is associated with the arthropathy, and that the deformity is in large measure the result of the fracture. Pitres and

¹ *Revue Neurologique*, February 28, 1903, p. 231.

² *American Medicine*, November 1, 1902.

Vaillard have had a case of tabetic arthropathy of the spine with necropsy. The lumbar or thoracolumbar region is the part most commonly affected, and this is important inasmuch as the lesions of tabes usually begin in the corresponding portion of the cord.

A case of arthropathy of the spinal column in tabes has recently been reported from the nervous clinic of the Johns Hopkins Hospital.

EARLY TABES. Otto Maas¹ reports from Oppenheim's clinic six cases of tabes beginning in childhood or youth. All were females, and this is in accordance with the observations of others. The greater liability of the male sex, so prominent when tabes develops later in life, is not seen in early tabes.

P. Linser,² in reporting a case of juvenile tabes, says that only 21 cases of this kind have been reported. In the majority of the cases the first signs occurred during the period of puberty, and the disease had progressed slowly, and after reaching a certain stage the symptoms have ceased to progress during several years. Ataxia in these cases has been relatively late. In the 21 cases syphilis of the parents was established in 17, was probable in 2, and was doubtful in the remaining 2 cases. In Linser's case, also, syphilis of the father was clearly established.

MUSCULAR ATROPHY IN TABES. The muscular atrophy occurring in tabes may be excessive and implicate the entire body. I have seen tabetic patients wasted to an extreme degree. According to some, especially Dejerine, the cause is to be found in multiple neuritis, but according to others the spinal cord is at fault. Joseph Collins³ is the most recent author who has made these tabetic muscular atrophies the subject of special study. He thinks that the intense atrophy has nothing peculiarly characteristic in its clinical manifestations, except that it overshadows the tabes which is rarely typical in its clinical delineation. In one of his cases the atrophy was confined to the upper extremities. In the first case that Collins reports the atrophy was among the first symptoms. The patient, a man, aged forty-three years, had some throat trouble after an attack of pleuropneumonia, and at about the same time he noticed that both hands were somewhat numb, and that there was some loss of strength in the left hand. A few months later he noticed that spaces were beginning to form between the bones of the left hand. After this atrophy of the interossei had become marked; weakness and atrophy of the muscles of the right hand developed. Later the atrophy extended to the forearms, arms, and shoulders. All this time there was no pain. The commencement of the atrophy in

¹ *Monatsschrift f. Psychiatrie und Neurologie*, September, 1902, p. 231.

² *Münchener med. Wochenschrift*, 1903, No. 15, p. 637.

³ *Journal of Nervous and Mental Disease*, June, 1903.

the hands is noteworthy in a case of tabes. Coincident with the development of the disturbances mentioned above, or, possibly, sooner, the patient observed that he had difficulty in urination. He had also constipation, and had become impotent. About this time he noticed a sense of insecurity in walking in the dark. About eighteen months after the symptoms began in the hand the right leg became lame, so that he could not raise the thigh or cross the right leg over the left without manual assistance, and foot-drop soon developed. Still there was very little pain. The limb wasted from the hip to the toes. Six months later a similar condition in the left lower limb was observed. The wasting in the lower limbs progressed much more rapidly than that in the upper. Later this patient had Argyll-Robertson pupils, myosis, and optic atrophy.

Microscopic examination showed that the posterior columns and the posterior part of the lateral columns and the posterior roots were degenerated in the lumbar region. The involvement of the posterior part of the crossed pyramidal tracts was most evident in the upper lumbar region, least evident in the thoracic region, and slight in the cervical region. The direct pyramidal tracts were not affected. The nerve cell bodies of the anterior horns appeared to be normal. The nerves examined were degenerated.

Collins regards this case as one of tabes with muscular atrophy of nerve origin. He passes, I think, too hastily over the degeneration of the crossed pyramidal tracts. May not this case have been one of combined sclerosis? This was the only one of the three cases with necropsy.

The investigation of Dejerine many years ago has shown that in most cases of tabes in which atrophy occurs neuritis is probably the cause of this atrophy, and there are those who believe that tabes is first of all a multiple neuritis with secondary implication of the spinal cord. There is something to be said in favor of this view, although it is not generally accepted. Cases of extreme and general atrophy in tabes are not very common, although a moderate degree of emaciation can hardly be considered as rare.

TREATMENT OF TABES. Lemoine¹ has more faith in the treatment of tabes and paretic dementia by mercury than many others have. He reports six cases of the latter disease in detail in which much improvement was noticed from this treatment. In two other cases the progress of the disease was arrested by the treatment. This subject had been previously discussed before the Congress at Toulouse in 1902, but Lemoine returns to it as he wishes to report his cases in detail.

¹ *Revue Neurologie*, July 30, 1902, p. 657.

He acknowledges that he has treated cases by the same method without obtaining any improvement, and he believes that only young paretics may be benefited. Small doses of mercury are useless; large doses should be employed, and it seems to be of less importance which salt is used. He employs the benzoate of mercury, and has given as much as six centigrammes daily. One can hardly be too cautious in judging of the results of treatment in paresis and tabes, because improvement may occur without treatment, and Fournier in his extensive experience has never seen a paretic dement recover.

Lemoine reports six cases of tabes in which improvement was obtained by the mercurial treatment. In one of these recovery is said to have occurred. The patient was a teacher of dancing, who had the signs of tabes well marked and walked with great difficulty and with the aid of two canes. After the treatment with large doses of mercury the disturbance of gait and much of the pain disappeared, but the reflexes did not return. It seems to be stretching a point—indeed, two or three—to call this a case of recovery, especially as the condition of the patient after the treatment is not very fully given. The benzoate of mercury is administered by subcutaneous injection, and not more than two or three cubic centimetres of fluid should be injected in one place. It rarely causes signs of intoxication, and only after it has been given a long time. It is cumulative in its effects, and should, therefore, be discontinued as soon as any signs of intoxication appear.

This paper of Lemoine is remarkable. He himself acknowledges that it is not the benzoate of mercury, but the administration of the mercury in large amount which is of benefit in cases of paresis and tabes. One can hardly be convinced by his paper, because mercury has been employed so long and in such large doses in cases of tabes and paresis by many physicians, and the favorable results obtained by Lemoine have not been obtained by many others. So true is this that many doubt whether it is wise to employ this treatment in these cases. I am not referring to cases of syphilis of the nervous system. I, as well as others, have seen great benefit result within a short time from an antisiphilic treatment when the disease was a frank manifestation of recent syphilis, but when the symptoms have existed a long time the treatment has not usually given so brilliant results.

Pseudotabes. In a case which presented many of the symptoms of tabes, Joseph Collins¹ found lesions more extensively distributed over the spinal cord than they are in cases of true tabes, and the lesions were not symmetrical, and were apparently in relation with vascular degeneration and new tissue formation. This case showed, as other

¹ New York Medical Journal, April 4, 1903.

cases have done, that it may be impossible to distinguish clinically between syphilis of the spinal cord and true tabes, for while the lesions were not positively those of syphilis they were regarded probably as syphilitic by Collins. A case in which there is loss of the patellar reflexes, disturbance of cutaneous sensibility, impairment of the sphincters, impotency, and Argyll-Robertson pupils may be one of syphilis of the spinal cord. Often when I make a diagnosis of tabes I have a suspicion that the case may be one of spinal syphilis. It is because of this uncertainty that the antisymphilitic treatment is wisely employed, at least for a time, and yet I do not think that spinal syphilis resembles tabes so closely that the correct diagnosis is impossible. Collins holds the same opinion, as he says the most uncommon form for spinal syphilis to assume is that of tabes. He thinks that the failure to differentiate tabes from *multiple neuritis* and from flat feet is nearly always the result of failure to make a careful examination. Cases of multiple neuritis that simulate tabes can be differentiated by tenderness on pressure over the nerves, symmetry of the sensory and motor impairment, reaction of degeneration of the nerves and muscles, and absence of the Argyll-Robertson pupil.

Ataxia. Ataxia caused by sensory disturbances has been a subject of dispute for many years. Satisfactory cases are rare, because weakness is usually associated with sensory changes. A case which Strümpell¹ has recently reported is unusually favorable for a study of the influence of sensory disorders on movement. As a result of a stab wound of the spinal cord the right upper limb of a man was anæsthetic, but only a little weak. The exact situation of the lesion could not be determined, and for the study of ataxia it was not necessary that it should be. An attempt to touch a definite point with the right hand caused very ataxic movements, and the ataxia was increased by closing the eyelids. It was impossible for the man to hold his right upper limb extended in a horizontal position when the eyes were closed, and even when the eyes were open the position of the right hand was abnormal. The sense of position was much impaired in the fingers of the right hand. This case seems to show that sensory changes cause ataxia. Thermanæsthesia and analgesia may exist without ataxia, but in Strümpell's opinion organic anæsthesia of the deeper parts is always associated with ataxia. There may, however, be a motor ataxia, as seen in disseminated sclerosis, but the importance of sensory impressions in the co-ordination of movement is well shown by Strümpell's case.

Babinski² describes two forms of *volitional equilibrium*—the static and the kinetic. By volitional equilibrium he means that form which

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxiii., Nos. 1 and 2, p. 1.

² Revue Neurologique, May 30, 1902, p. 470.

depends upon volition, as, for example, holding the upper limb immobile in the horizontal position, and he distinguishes this from the equilibrium dependent on muscular tonicity alone. In tabes both the static and the kinetic equilibrium are impaired, but impairment of the former is more manifest at first. In *cerebellar asynergy* the static equilibrium may be preserved when the kinetic equilibrium is greatly disturbed, and the power to maintain the muscles in a fixed position may be even greater than in a normal person. Babinski means by cerebellar asynergy the inco-ordination usually known as cerebellar ataxia. He describes a new position for testing static ataxia. The patient should lie flat on his back, with the thighs flexed on the abdomen, and the legs flexed slightly on the thighs. In this position the tabetic ataxia becomes excessive.

ACUTE ATAXIA. Ataxia developing acutely after some infectious disease is observed not very infrequently, and sometimes the symptoms suggest multiple sclerosis, but disappearance of all symptoms is decidedly contrary to such a diagnosis. The lesions in these cases have been supposed to be disseminated myelitis, which is not the same as disseminated sclerosis. The scarcity of necropsies is the cause of the uncertainty in diagnosis. *Typhoid fever* seems to be the disease most likely to be followed by acute ataxia, and therefore it is interesting to read what Hugo Lüthje¹ has to say in relation to three cases of typhoid fever followed by acute ataxia. In these cases there were unconsciousness lasting weeks and beginning with delirium, gradual return of consciousness, some evidence of motor irritation, intense ataxia without paralysis, exaggerated cutaneous and tendon reflexes, etc. The article is a long one, but it gives us no information regarding the nature of the lesions causing symptoms like those of multiple sclerosis.

Von Bechterew² has described acutely developing inco-ordination, resembling the gait of a drunken person, and vertigo in alcoholic persons. He does not imply that this symptom-complex may not be produced by other causes, but distinguishes it from the acute ataxia developing after infectious diseases described by Leyden, C. Westphal, Dinkler, and others, and associated with symptoms suggesting *disseminated sclerosis*, viz., intention tremor, scanning or abnormal speech, spastic paresis of the lower limbs, etc. V. Bechterew makes a distinction between the two forms of acute ataxia, but it is not improbable that further study will show the distinction is not very sharp. In the form that he describes the ataxia of a cerebellar character develops acutely; after coma or ordinary sleep the patient finds he has great difficulty in walking on account of inco-ordination, and he experiences

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxii., Nos. 3 and 4, p. 280.

² Neurologisches Centralblatt, May 16, 1902, p. 435.

vertigo, pressure in the head, and nausea, or even vomiting. The symptoms, with the exception of the inco-ordination, gradually disappear. Paralysis or disturbance of sensation does not occur, and the patellar reflex is preserved and may be slightly exaggerated. A case with v. Bechterew's symptom-complex, resulting from eating tainted fish, is reported by Schnitzer, and v. Bechterew expresses his regrets that Schnitzer does not distinguish between the two forms of acute ataxia. The symptoms in Schnitzer's case entirely disappeared. His case shows that chronic alcoholism is not the only cause of the acute cerebellar ataxia. V. Bechterew believes that the symptoms are the result of an acute affection of the cerebellum, probably of vascular nature.

Spinal Syphilis. *Syphilitic meningomyelitis* sometimes causes rapidly developing paralysis of the lower limbs, but very rarely does it cause quadriplegia, and yet such a case has been observed by C. K. Mills and myself.¹ Syphilitic meningomyelitis is usually most intense in the thoracic region. Out of 12 cases, tabulated by Williamson, in 10 the lesion was wholly or almost wholly thoracic. In 1 it was thoracic and lumbar, in the other it was thoracic and cervical. The localization to one part of the cord is never absolute, as careful examination will always show an extension of the process beyond the region chiefly affected. The case which we reported was of interest because of the chief lesion being in the cervical portion of the cord, and because of the rapid development of the paralysis. A man, aged forty-five years, fell from his wagon and struck his left shoulder. Two weeks later he was obliged to quit work on account of pain in his left upper limb. The pain diminished, and the man returned to his work. About three months after his fall pain in the left upper limb and between the shoulders became severe, and after another month he suddenly lost the use of his left upper limb. His paralysis was followed in a short time by paralysis of the left lower limb, then of the right side of the face, of the right upper and finally of the right lower limb. Five or six hours elapsed between the time when he first noticed paralysis of the left upper limb and the time when the right lower limb became paralyzed. He complained of swelling and of dull pain in the parts after they were paralyzed, but he felt no pain immediately preceding the paralysis, and he was not unconscious at the time. He was not aphasic. After the paralysis he had a severe headache. He was fully conscious at first. While in the hospital his voice was a whisper, bilateral ptosis was present, the muscles in the distribution of the right facial nerve were paralyzed; he could shrug his shoulders well, but with the excep-

¹ Journal of Nervous and Mental Disease, January, 1903, p. 30.

tion of this movement paralysis of both upper extremities was complete; the limbs were flaccid, no contracture being present, and both lower limbs were paralyzed in all parts; biceps-jerk was almost lost on each side; the triceps-jerk was preserved on each side; the patellar reflex was present on each side, but diminished, and ankle clonus and Babin-ski's reflex were not obtained on either side. The sensory condition was of special interest. Tactile sense was preserved on both sides of the face, in the upper extremities, and on both sides of the thorax and abdomen. Temperature sense and pain sense were preserved on both sides of the face and neck, but were lost on the right side of the chest and abdomen, and diminished on the left side of the same. These forms of sensation were lost in the distal portion of the right upper limb, and were diminished in the left upper extremity; they were lost in the right lower extremity and greatly diminished in the left, although tactile sensation was nearly normal everywhere. There existed, therefore, the syringomyelic form of disturbance of sensation. The case at necropsy was found to be one of meningomyeloencephalitis, with intense softening of the fourth, fifth, and sixth cervical segments of the spinal cord.

In this case the rapidity with which the paralysis of the four limbs and of the face, with sensory, pulmonary, and other symptoms of a serious character developed, made the diagnosis of spinal hemorrhage into the cervical region seem probable. Indeed, not long before we had had a similar case resulting from a hemorrhage into the medulla oblongata. The pathological examination showed acute myelitis of great intensity with long-standing disease of the bloodvessels. Numerous small hemorrhages were present in the inflamed and disintegrated cord, but these were secondary, or, at most, concomitant with the attack of myelitis. Such hemorrhages are not at all uncommon in myelitis. The presence of severe pain in the left upper limb and between the shoulders, existing about one month before the paralysis developed, is not remarkable in cases of syphilitic disease of the bloodvessels, and is not common in primary hæmatomyelia. The syringomyelic form of dissociation of sensation in this case was noteworthy, inasmuch as it was caused by a transverse lesion of the spinal cord and was like that observed and reported by me in a case of trauma to the spinal cord, referred to elsewhere in this review.

It is difficult to account for the paralysis of the right side of the face in this case. The meningitis was equally intense on the two sides of the pons, and it was difficult, therefore, to attribute this palsy to the meningitis. The facial palsy was peripheral in type, and the entire distribution of the right facial nerve was implicated. The palsy may really have existed longer than the man was aware of, or possibly was

produced, as facial palsy usually is, by exposure to draughts or cold, or perhaps by syphilitic disease within the Fallopian canal.

As a contrast to this case reported by Dr. Mills and myself, I may refer to one of quadriplegia of gradual development occurring in the service of F. X. Dercum¹ and reported by him. Little by little the spasticity and contracture of the upper and lower limbs became more and more pronounced, until the patient, a woman, became unable to walk. At various times she suffered from pain in the back and in the upper and lower limbs. The bowels became constipated and micturition was difficult. The face was not paralyzed. Sensation was affected in the upper extremities and the trunk, and to a less degree in the lower limbs. The central portion of the spinal cord in the upper part of the cervical region was much disintegrated, so that the cord tissue in some parts had disappeared. The area of softening extended into the lateral column of each side, and as a consequence the pyramidal tracts were degenerated. A glassy homogeneous infiltration in places was seen in the central region of the cord, and to some extent this infiltration penetrated between the nerve fibres, leaving them more or less widely separated from one another and embedded in a homogeneous glassy matrix. The walls of many of the intramedullary bloodvessels were much thickened, and some had undergone a colloid-like change. The cause of this softening is difficult to determine, and it is uncertain whether it followed or caused the alteration of the walls of the vessels.

Erb² shows how difficult it is to determine by the findings in the nervous system whether the case is one of syphilis or not. The so-called specific lesions, viz., vascular sclerosis, round-cell infiltration, gumma, are not strictly confined to syphilis, but may resemble the lesions of other diseases. It may be impossible to distinguish syphilis from tuberculosis, and even the presence of the tubercle bacillus does not exclude the possibility of a mixed infection. The question now arises whether lesions not regarded as specific, viz., primary parenchymatous degeneration of nerve fibres and nerve cell bodies, with or without neuroglial proliferation; chronic myelitis, tract degeneration, etc., may not in reality be caused by syphilis. To answer this question it is necessary to determine whether or not such lesions occur in association with lesions regarded as specific, and whether they occur frequently without so-called specific lesions in persons who have been infected with syphilis when other causes cannot be detected. Erb has been able by a study of the literature to answer this question in the affirmative, and he believes, therefore, that primary degeneration of tracts, sclerosis,

¹ *Journal of Nervous and Mental Disease*, February, 1903, p. 65.

² *Deutsche Zeitschrift f. Nervenheilkunde*, vol. xxii., Nos. 1 and 2, p. 100.

and atrophy of nerve tissue may be caused by syphilis as truly as meningitis, gumma, or arteritis. This, of course, does not mean that every tract degeneration is syphilitic in origin. The changes in tabes may be as truly syphilitic as any other—*i. e.*, they may not only be syphilitic in origin, but also syphilitic in nature. If Erb's method of reasoning is carried further we shall have to acknowledge that certain diseases like multiple sclerosis, now not believed to be of syphilitic origin, may be of this origin.

Syringomyelia. The investigations of Couvelaire¹ in fifty-one necropsies of children having died at birth have shown that in six cases there was hemorrhage into the substance of the spinal cord, and in five hemorrhage into the brain. The cerebral hemorrhages were found in children weighing less than two kilos (five pounds)—*i. e.*, in children born prematurely. The hemorrhage into the cord was found in children weighing more than three kilos (seven and one-half pounds) who had been born in difficult labor, and it was usually in the cervical or upper thoracic region, and was symmetrically situated in the anterior and posterior horns.

These cases of spinal hemorrhage may indicate one method in which syringomyelia occurs, especially as they are confirmative of earlier investigations. A hemorrhage into the cord at birth may be partly absorbed and function may be restored, but years after this lesion has developed disintegration of the cord at the seat of the early hemorrhage may result in syringomyelia. This, of course, is theory, but reasonable.

SYRINGOMYELIA AND LEPROSY. The relation between syringomyelia and *Morvan's disease* has been determined, and the latter is now generally recognized as a clinical manifestation of syringomyelia. The distinction between lepra and syringomyelia has been under consideration for many years, since Zambaco brought the subject prominently to the front. A case reported by Gerber and Matzenauer² is said to be the first in which syringomyelia and leprosy have occurred in the same person. *Lepra bacilli* could not be found in the peripheral nerves or spinal cord, but were found in a piece of skin excised while the patient was living. There seemed to be no distinct connection between the two diseases, and yet Schlesinger, who examined the preparations from this case, remarked that the possibility of a causal relation could not be entirely put aside. The patient was over eighty years of age, and syringomyelia generally develops at an earlier period of life; so that the unusual age at which syringomyelia appeared suggests an unusual cause. This case of Gerber and Matzenauer unfortunately does not solve the problem and explain the relation of syringomyelia and leprosy.

¹ *Semaine Méd.*, April 1, 1903, p. 105.

² *Obersteiner's Arbeiten*, vol. ix.

Hæmatomyelia and Nerve Injury. It is important to remember that an injury may cause both brachial plexus palsy and hæmatomyelia, as in two cases reported by Dejerine and Egger.¹ In these cases, as a result of accident, paralysis in the brachial plexus distribution was associated with the syringomyelic form of dissociation of sensation beyond the region of innervation from the brachial plexus. The explanation offered was that the posterior roots had been torn, and that a hemorrhage into the spinal cord had occurred at the same time. Experiments have shown, according to Dejerine and Egger, that the tearing off of spinal roots is always followed by hemorrhage more or less abundant in the spinal cord.

Progressive Spinal Muscular Atrophy. A case without necropsy, believed by H. Meunier² to be one of progressive spinal muscular atrophy, was remarkable because of a peculiar temporary contraction of the muscles of one limb. The phenomenon usually developed during sleep. When the patient awoke he found that his right leg was flexed upon the thigh and the thigh upon the pelvis, and this contraction made it difficult for him to extend the limb, although it was not impossible. After he had risen from his bed he found that for about an hour it was impossible for him to put his heel upon the ground, and the foot was in extension. He walked in this manner and descended the stairs upon the toes of the right foot, but during the course of the day the phenomenon disappeared. No previous mention of transitory contraction in progressive spinal muscular atrophy seems to have been made in literature except by Hahn. The explanation of this phenomenon is difficult.

A. Léri³ has found atrophy of the muscle fibres of all the viscera—intestine, stomach, bladder, heart, and gall-bladder—in a case of progressive spinal muscular atrophy of the Aran-Duchenne type. In some of the viscera small hernias resulting from atrophy of the muscular fibres were found. This seems to be the first case in which the unstriated muscles as well as those of voluntary motion were atrophied, although the possibility of implication of the viscera has been recognized for some time. In 1853 Cruveilhier reported the results of the necropsy in a case of muscular atrophy, and one of his assistants, Roux, remarked that he did not understand how the viscera escaped. Cruveilhier replied that they had, nevertheless, and this statement, according to Léri, seems to have hindered further investigation on the subject. Asthmatic attacks, obstinate constipation, etc., may be the result of this visceral atrophy.

¹ *Revue Neurologique*, June 15, 1902, p. 537.

² *Ibid.*, June 30, 1902, p. 545.

³ *Ibid.*, May 15, 1902, p. 394.

Two cases which show how similar symptoms may be caused by very different lesions are reported by C. E. Beevor.¹ The two patients were admitted to the hospital within a few weeks of each other, and they presented at birth complete paralysis of all the muscles of the lower limbs and trunk excepting the diaphragm. In the first case there was also complete paralysis of both arms, and in the second partial paralysis of one arm. In both cases all the affected muscles were flaccid and did not react to faradism, and there was loss of sensation in the legs and trunk as high as the second thoracic segment. The symptoms in the first case were due to a progressive atrophy of the cells of the anterior horns and degeneration of the posterior columns, which had commenced *in utero*, and in the other case to hemorrhage into the spinal cord caused by dislocation of the spinal column at birth and to stretching of the right brachial plexus.

This first case was exceptionally interesting. The child at birth had paralysis of all the muscles except the diaphragm. The face muscles and others supplied by the cranial nerves and all the affected muscles were very much wasted, and not one of the paralyzed muscles gave any reaction to the faradic current, though they gave the reaction of degeneration with the galvanic current. Analgesia and probably anæsthesia of the whole trunk and of all the limbs were present. The knee-jerk was lost, but the plantar reflex was present, and the cremasteric also was very distinct. Out of eight children in this family three others were affected like the one described, but they were born apparently healthy, and at the end of a month or six weeks they became weak all over and had wasting of muscles.

The symptoms can be explained by the degeneration of the cells of the anterior horns of the spinal cord and the degeneration of the posterior columns. The degeneration found in the brachial plexuses was supposed to be caused by traction on the arms at birth. As in progressive spinal muscular atrophy in the adult the sphincters escape, so they escaped in this case.

Beevor compares his case with those described by Werdnig and Hoffmann, to which I have referred in the past in my remarks in PROGRESSIVE MEDICINE. It agreed with them in the hereditary predisposition of several members of one family to be attacked, and also in the muscles which were implicated, and in their behavior to the electrical currents, and in the absence of the knee-jerks and the normal condition of the sphincters. It differed from them in the disturbance of sensation and in the age at which the symptoms began. It agreed with them pathologically in that the cell bodies of the anterior horns were

¹ Brain, 1902, vol. xxv., No. 97, p. 85.

degenerated, but it differed from them in that the posterior columns were degenerated. Beevor thinks his case belongs to a different type from that described by Werdnig and Hoffmann, and yet it has a striking resemblance to it.

The second case was an example of dislocation of vertebræ at birth with hemorrhage within the cord, and is important in connection with the first case, as in that also the labor had been difficult, but there was the history of three other children of the family having been similarly affected, without which the diagnosis must have been much more difficult.

Lesions of the Conus. Lesions of the conus terminalis, by which the functions of the lowest portion of the spinal cord can be determined, are not very numerous, and, therefore, it is well to give attention to a recent case of this character reported by Raymond and Cestan.¹ A man fell a distance of ten metres and struck upon the sacrum. The fall was followed by transitory paraplegia and disturbance of the sphincters. The motor weakness of the lower limbs gradually disappeared, but certain symptoms persisted. He had incontinence of feces, increased desire to urinate without true incontinence, impaired sexual power—slight erection and weak ejaculation without voluptuous sensation—anæsthesia of the urethral and rectal mucous membranes, and cutaneous anæsthesia to all forms of sensation in the perineoanal region. This condition persisted about five years. The vertebral column was not implicated, and there was no sign of an old fracture, but the conus was small and sclerotic as a result of an old myelitis. The fourth and fifth sacral segments were completely destroyed, the third sacral segment was partially diseased, but the cord became normal at the second sacral segment. The traumatic myelitis was not caused by a displaced piece of bone, and there were no signs of hæmatomyelia. Raymond and Cestan believe that the myelitis was caused by concussion and stretching of the cord.

The importance of this case lies in the fact that it seems to demonstrate clearly that disturbance of micturition, of defecation, and of the sexual functions, and anæsthesia of the perineal, anal, and external genital regions, follow lesions of the spinal cord below the second sacral segment.

Sclerosis of the Spinal Cord. There is dispute regarding the pathological process of combined systemic disease, and so there is a difference of opinion regarding the most suitable name. Burr and McCarthy² prefer to speak of posterolateral sclerosis, and they report

¹ *Revue Neurologique*, July 15, 1902, p. 648.

² *Journal of Nervous and Mental Disease*, January, 1902, p. 14.

8 cases which are of mixed pathology, 2 of them representing syphilis of the nervous system; 5 were cases of diffuse degeneration affecting the posterior and lateral columns, and in 4 of these there was an associated intense anæmia. In only 1 was the anæmia pernicious in type; in another it was associated with senility, and in a third with parenchymatous nephritis. Like almost all writers, Burr and McCarthy accept the toxic theory as the best explanation of the diffuse degeneration. In all their cases the subacute degeneration affected the lateral and anterior portions of the cord, but the secondary sclerotic process was most intense in the posterior and lateral columns, and the clinical phenomena were referable to the alteration of these portions. They arrange disease of the posterior and lateral columns under the following headings: 1. Friedreich's ataxia. 2. Tabes with associated diffuse sclerosis extending into the lateral columns. (To this group they add the cases of tabes associated with parietic dementia with secondary lesions in the crossed pyramidal tracts. To my mind it has never been clearly demonstrated that a true tabes—*i. e.*, the disease known also as locomotor ataxia—ever extends to the lateral columns.) 3. Tabes with degeneration in the crossed pyramidal and direct cerebellar tracts, with or without degeneration in Clarke's columns. 4. Posterior sclerosis with sclerosis of the lateral columns and disease of the anterior horns. 5. Primary lateral sclerosis with minor changes in the posterior columns. 6. Subacute diffuse degeneration of the spinal cord due to anæmia, cachexia, sepsis, etc., with sclerosis in the posterior and lateral tracts predominating both in clinical manifestation and under the microscope. 7. Diffuse interstitial sclerosis, seen occasionally in chronic alcoholism with multiple neuritis, in which the parenchymatous degeneration is secondary to the overgrowth of glial and connective tissue elements. (In this same group on account of the similarity of the pathological process may be added the syphilitic posterolateral sclerosis secondary to meningeal lesions. Thus they classify together processes that are inflammatory in character, like syphilis, with more truly degenerative forms. It is true that the distinction is not always easy to make.) 8. A combined system disease of unknown origin affecting the posterior and lateral columns, and distinctly confined to the direct and crossed pyramidal tracts and the posterior columns; the direct cerebellar tract may also be involved.

Spastic Spinal Paralysis. Fourteen cases of spastic spinal paralysis occurring in one family are certainly worthy of more than passing notice. The very existence of a spinal form of family spastic paralysis, as distinguished from the cerebral form, has been disputed. No necropsy has been obtained in any typical case of the spinal type in which the disease had commenced in childhood. The fourteen cases in

the family that I have studied were without necropsy, but the diagnosis seems reliable. I should mention that these cases were reported about five years before they came under my observation—a fact that was unknown to me at the time I published my report.¹ One or two cases with necropsy in which the symptoms began in adult age have been reported by Strümpell. The peculiarities of Strümpell's type are: commencement of the disease between the twenty-fifth and thirtieth year of life with spasticity of the lower limbs; very slow progression of the disease to paraplegia; occasionally implication of the upper limbs; integrity of sensation and of the functions of the bladder and rectum; hereditary and family manifestation of the disease and its occurrence only in male members.

In both the cases observed by me—father and son—the symptoms are merely spastic paresis of the lower limbs with contractures and exaggerated reflexes of these limbs. There is no muscular atrophy. Both patients are very intelligent. The father's symptoms began at the age of five years, the son's at the age of eighteen months. Still another son, who seemed to be healthy when my report was published, has since shown the early signs of the disease. There can be little doubt that the cause of this condition is primary degeneration of the pyramidal tracts. Further investigation has shown that more than fourteen members of this family were affected with the same disease.

H. Kühn² has observed spastic spinal paralysis occurring in three brothers. The father had a peculiar gait. One daughter died at an early age. Three daughters who lived showed no signs of the disease, but the three sons were affected. In one son the disease became manifest in his twelfth year, in the other two about the eighteenth year. The progress of the disease was very slow. The gait was spastic or spastic parietic. Sensation for pain in the soles of the feet was disturbed in one of the brothers.

Flaccid Paraplegia. A remarkable case of flaccid paraplegia in a child is reported by A. H. Davisson and D. J. McCarthy.³ The baby was born without motor power in its lower limbs, and when sensation was tested with the point of a pin no recognition of pain was made until the xiphoid cartilage was reached. The bladder and rectum were paralyzed, and the abdomen was flaccid. The necropsy in this case showed that the spinal cord was flattened from the second thoracic to the eleventh thoracic segment. This alteration was probably the result of an injury at birth, possibly a hemorrhage into the substance of the cord. The editorial on this paper published in the same number of the

¹ Philadelphia Medical Journal, June 21, 1902.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xxii., Nos. 1 and 2, p. 132.

³ Philadelphia Medical Journal, February 21, 1903, p. 357.

Philadelphia Medical Journal properly calls attention to the importance of this unique case. It is true that the brain and spinal cord, especially the former, are not very firm at birth, and it is not surprising, therefore, that an injury to these organs may be most serious. We are also well aware that fracture of the spinal column is not necessary in order that trauma may produce degenerative changes in the spinal cord, and we know also that an injury of the head may cause cerebral hemorrhage without fracture of the cranium. A newborn babe requires very careful handling, and the neurologist too often sees the effects of careless treatment in epilepsy and arrested cerebral development.

Spinal Tumor. R. T. Williamson¹ believes, from a study of the literature on spinal tumors and from his own observations, that the proportion of successful to unsuccessful cases as regards operation is probably very small, since many of the latter are not published. Only certain tumors can be removed. Success may be expected when the tumor is a fibroma, fibromyxoma, psammoma, lymphangioma, exostosis, and perhaps fibrosarcoma and fibromyxosarcoma. Hydatid cysts also may be removed. He thinks that operation to preserve life is useless in the ordinary form of sarcoma of the vertebræ, but it may be undertaken, on the advice of Horsley, to relieve extreme pain. It is impossible to remove intramedullary tumors of the spinal cord without great injury to the cord. The forms of extradural tumors most suitable for removal are hydatid cysts, but other forms have been removed with good results.

Operation should be early if it is to be done at all. If there is no evidence of the syphilitic nature of the tumor the delay of the operation for weeks, in order to give a trial of antisyphilitic treatment, may be the cause of an unsuccessful result when the operation is finally performed.

The diagnosis of the location of the tumor is difficult and yet of great importance if operation is to be done. According to Starr, a level of the cord should be exposed at least four inches higher than the level of the entrance of the spinal nerve in which pain is felt, and in case no tumor is then found the wound should be enlarged upward.

In a case of tumor of the spinal cord observed by E. Meyer² very severe pain and paræsthesia were felt in the left upper limb, and almost at the same time weakness of this limb was noticed. A year and a quarter later spastic paresis developed in the left lower limb; a few months later the right upper limb became flaccid and parietic, and the right lower limb spastic and parietic. Pain, spontaneous and on pressure, was felt in the cervical vertebræ, especially in the fourth and

¹ Medical Chronicle, September, 1902.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xxii., Nos. 3 and 4, p. 232.

fifth. The weakness in the lower limbs increased very greatly ; atrophy of the upper limbs was seen, especially in the forearms, and there were vesical and rectal symptoms. The Brown-Séquard form of paralysis did not exist. Hypæsthesia and hypalgesia were present in the ulnar side of each upper limb.

These symptoms were very suggestive of tumor compressing the spinal cord, and a tumor—a fibrosarcoma—was found at necropsy extending from the sixth cervical to the first thoracic segment. It is strange that operation was not attempted in this case. It is important to note that in the later stages of the disease the sensory and motor symptoms were more pronounced on the right side than on the left, although the tumor was on the left side.

Oppenheim¹ has had another case of spinal tumor with successful operation. A young girl began to complain of pain in the right abdominal region, and sclerosis was detected. The lower limbs, especially the right, became stiff and weak, and ankle clonus and the Babinski reflex were obtained on the right side. The left lower limb was hypæsthetic, and the abdominal reflex on the right side disappeared. These and other symptoms pointed to a compression of the spinal cord, and the diagnosis of tumor within the spinal canal was made. The question then arose as to whether the tumor was within or outside of the spinal cord. The rapid development of the symptoms—within six to eight months ; the relative feebleness of the pains, and the absence of vertebral symptoms—pain on pressure—suggested an intramedullary situation of the tumor, and the scoliosis could be explained by a glioma, as this deformity is well known in syringomyelia. However, the course of the disease, the commencement with unilateral root symptoms, and the existence of these for months before signs of compression of the spinal cord were observed, the Brown-Séquard type of paralysis, indicated that the tumor was extramedullary. The distribution of the pain in the region innervated by the ninth, tenth, and eleventh right thoracic roots ; the anæsthesia in the same area, the loss of the abdominal reflex from irritation below the umbilicus, and the slight weakness and degenerative atrophy of the abdominal muscles on the right side showed the region of the spinal cord affected. The eighth and ninth thoracic vertebræ were operated upon, and the tumor, a fibroma, was found and removed. The patient fully recovered, and all symptoms disappeared. Such a case as this is a triumph for neurology and surgery.

I have recently reported² briefly eleven cases of tumor of the spinal cord or spinal column. The cases were not all my own, but those that

¹ Berliner klin. Wochenschrift, September 29, 1902, p. 905.

² Univ. of Penna. Medical Bulletin, April, 1903, p. 56.

were not were seen by me. One was a case of sarcoma of the cauda equina, and death was caused by the attempt at removal of the tumor. Another was a case in which a small tumor was found confined to one nerve root. So far as I know it had caused no symptoms. A third specimen was a lipoma of the filum, and it also had caused no symptoms. A fourth case was a sarcoma of the vertebræ, which resulted fatally. A fifth was a chondrosarcoma at the foramen magnum. A sixth was a sarcoma extending over the pons and medulla oblongata and down one side of the cervical region of the spinal cord. Metastasis had occurred lower in the pia. This case was unusually interesting, because the diagnosis could be made with great accuracy. Operation was, of course, out of the question. The symptoms indicated pressure upon the upper part of the spinal cord. It was possible to determine that the tumor was growing downward, because the paralysis extended from the higher muscles of the upper limbs to the lower muscles of these limbs. This indicated that the motor roots from above downward were successively compressed. Finally, the lower limbs became paralyzed. Choked disks and loss of smell were early symptoms in this case, and yet the olfactory system apparently was not implicated, so far as could be determined at the necropsy.

The seventh case was one in which an intradural fibroma compressed the cord. It could have been removed by operation.

The eighth case was one of paraplegia resulting from a sarcoma within the substance of the spinal cord. No operation could be done in a case of this kind.

The ninth case was one in which the symptoms pointed to a lesion within the cranium and to a transverse destruction of the spinal cord in the thoracic region. As the woman had been married about a year, it seemed possible that she had acquired syphilis from her husband, and had multiple syphilitic lesions. Again, as the symptoms developed a few days after the birth of a child, septic meningitis was taken into consideration. Multiple sarcomatosis of the brain and spinal cord was found, with a large tumor at the pontile cerebellar angle and another destroying the spinal cord in the thoracic region.

The tenth case was one of painful multiple carcinoma of the vertebræ.

The eleventh case was one of intradural cyst upon the spinal cord, giving the symptoms of tumor, and therefore included in this list.

Only in three of these cases could operation have been attempted justifiably, and in the first it hastened death; in the seventh it was not attempted, and in the eleventh it was very successful.

Of the 11 cases, 2 were without clinical signs of tumor; 2 were cases of tumor of the spinal vertebræ; 4 were cases of intradural but extramedullary growths, the tumor being situated on the medulla

oblongata in 2, compressing the cervical region of the cord in 1, implicating the cauda equina in 1; 2 were intramedullary growths in the thoracic region; 1 was an intradural cyst compressing the spinal cord in the lumbar region. Disregarding the cases without symptoms of tumor and those with tumor of the vertebræ, we have remaining 7 cases of tumor on or within the spinal cord, and in only 2 of these was operation advisable.

Disseminated Sclerosis. According to F. Schupfer,¹ fifty-nine cases of disseminated sclerosis occurring in children are to be found in the literature, but he believes that these cases have not all been correctly diagnosed and that the disease in childhood is not common. The symptoms of disseminated sclerosis may be caused by Friedreich's ataxia, cerebral spastic paralysis, syphilis, hysteria, brain tumor, malaria, etc., and the liability of making an incorrect diagnosis of the disease in childhood is greater than in adult life. Schupfer is able to refer only to four cases in early life with necropsy, and of these one is his own. It is desirable, he thinks, to make a distinction between those cases in which the disease became fully developed in childhood and those in which it merely began in childhood, as it did in one of the four referred to (Oppenheim's). Only in one case does heredity seem to have had any influence, and in this case the symptoms began immediately after birth, but became distinct at the seventh year of life. In Schupfer's case they began at the age of nine; in Henschen's at the age of fourteen, and the course of the disease was very acute in the latter. In Oppenheim's case the symptoms began at the age of fourteen, but were not distinct until the age of twenty-three. In all three cases (omitting Oppenheim's) the motor disturbances were more pronounced in the lower limbs. Disturbance of sensation was very marked in two cases, and rectal and vesical symptoms were present in all. It is questionable whether a reliable clinical picture of the disease as it occurs in childhood can be drawn from only three cases, and it is still more questionable whether it can be drawn from cases without necropsy.

Schupfer discusses the occurrence of secondary degeneration with disseminated sclerosis, and attempts to show that this degeneration is seldom really systemic.

Disseminated sclerosis is a rare disease in America, and the cases with necropsy can be counted on the fingers of one hand. I have recently reported² two cases, one so typical that we need not discuss it in detail. The other was most atypical, and shows the difficulty of recognizing all the clinical forms disseminated sclerosis may present.

¹ *Monatsschrift f. Psychiatrie und Neurologie*, July and August, 1902, pp. 60 and 89.

² *American Journal of the Medical Sciences*, January, 1903, p. 61.

The patient, a woman then about forty-one years of age, in 1891 complained of numbness in the feet, and soon the legs became numb. She had at this time progressive loss of power in the lower limbs and staggering gait. Within two days the numbness extended as high as the waist, and she complained of girdle sensation and had complete paralysis of the lower limbs. She had also incontinence of urine and feces. She had resided in a damp house. The disturbance of gait soon disappeared for a time, and she was able to walk with difficulty until 1899, but staggered. In 1901 her speech was somewhat drawling. The lower limbs were completely paralyzed, were much wasted and spastic, but the patellar and Achilles tendon reflexes were absent. The Babinski reflex was very pronounced. Sensation was normal. The upper limbs were weak. She had almost complete external ophthalmoplegia and partial atrophic cupping of both optic nerves. The typical lesions of disseminated sclerosis were found.

Muscular atrophy has been regarded as uncommon in disseminated sclerosis, and secondary degeneration of the spinal cord resulting from the sclerotic areas is said not to occur, and yet in my case pronounced muscular atrophy and slight secondary degeneration of the crossed pyramidal tracts were observed. The loss of the patellar reflexes with increase in the muscular tonicity of the lower limbs in my patient was interesting, because, according to the opinion of some investigators, such a combination does not occur, and yet I have recently seen an exaggeration of the patellar reflex with diminished muscular tonicity on the hemiplegic side in a case of compression of the motor area of the brain by a tumor. Increase in tendon reflexes is usually associated with increase in muscular tonicity, but not always. The almost total ophthalmoplegia of my patient I was able to explain by the presence of a sclerotic focus in the nuclei of the third, fourth, and sixth nerves.

In rare cases multiple sclerosis has caused the symptoms of transverse myelitis. Such a case is reported by Flatau and Koelichen.¹ In this there were flaccid paralysis of the lower limbs, incontinence of urine and feces, loss of tendon and skin reflexes in the lower limbs, and bed-sores. Sensation was not disturbed. The upper limbs and cranial nerves were not implicated. There was no nystagmus, scanning speech, intention tremor, nor psychical disturbances. The examination of the eye-grounds might have permitted a correct diagnosis to be made, but this examination was omitted. Pallor of the disk, especially on the temporal side, is often an early sign of multiple sclerosis.

A case of multiple sclerosis in childhood with necropsy, such as G. Carrier² reports, is worth mentioning. His patient had transitory right

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxii., Nos. 3 and 4, p. 250.

² Revue Neurologique, October 15, 1902, p. 929.

brachial monoplegia, but three years later right hemiplegia with aphasia and contractures developed gradually; Jacksonian convulsions also occurred; the reflexes of the left side of the body were exaggerated, and slight intention tremor was seen in the left upper limb. A necropsy made years later revealed disseminated areas of sclerosis with vascular lesions. Hereditary syphilis was believed to be the cause of these alterations. The clinical history is unlike that of the disease known as multiple sclerosis, and it is questionable whether this case should be classed under this head, especially as hereditary syphilis was present. The lesions were scattered and may have been caused by the alterations of the walls of the vessels.

Myelitis. Joseph Collins¹ remarks that acute myelitis is very rare if we consider it to be an inflammatory state of the spinal cord due to infection or intoxication, the morbid process being caused either directly by the action of the microbes and their toxins acting upon the medullary parenchyma, or indirectly through the circulatory system. This is not my experience, because I find myelitis not very rarely in my studies of pathological tissue, and I mean especially round-cell infiltration about the bloodvessels of the cord and also of the pia. The chief cause of this condition is syphilis, but I hesitate to call every case with such findings syphilitic. The cases to which I refer, however, are usually not very acute.

The case which Collins reports is interesting because it seems clearly to have been one of *tuberculous myelitis*, inasmuch as the tubercle bacillus was found in the cord. His case was as follows: A young woman, four months pregnant, was taken ill without attributable cause, with symptoms of acute inflammatory rheumatism. After three weeks the symptoms subsided, and were followed by such indications of acute myelitis as motor paralysis of the lower extremities, incontinence of urine, pain in the back and extremities, spasmodic twitchings and contractions of the legs, and enormous bed-sores and other associated trophic disturbances. Soon after this she gave birth to a living child, the labor being painless. From this time the symptoms of meningeal involvement, which heretofore had not been conspicuous, became very evident. Extensive purulent leptomeningitis and myelitis were found. Microscopic examination of the lower thoracic region showed a focus of extensive myelitis, consisting of destruction of an area of the central gray matter surrounded by an annular area of myelomalacia.

Such cases as the one described by Collins occasionally occur as a result of syphilis, and a case of this kind has recently been reported by C. K. Mills and myself, and has already been referred to. They are

¹ Journal of Nervous and Mental Disease, December, 1902, p. 705.

not¹ commonly the result of tuberculosis, and, indeed, the lesions of syphilis and tuberculosis may exist in the same person. It is interesting to read that Collins' patient was able to give birth to a living child without labor pains, this absence of pains probably being the result of the transverse lesion of the cord in the thoracic segment.

Poliomyelitis. Poliomyelitis in the adult is rarely seen, and a case with necropsy is seldom reported. In E. W. Taylor's¹ case there were unexplained ill feelings with rise of temperature, followed by paralysis, involving all four extremities, but predominantly the legs. The symptoms reached their height in one to three days, and then improvement was noticed. There was at first some subjective disturbance of sensation, passing away in a few days and leaving a condition essentially of motor paralysis of the muscles of the trunk and extremities without at any time disturbance of consciousness. Death occurred. The pathological process was found confined to the spinal cord, and here chiefly to the ventral horns. There were evidences of primary inflammation with secondary degeneration and destruction of nerve cells and marked degeneration of peripheral nerves.

Taylor remarks that there is a tendency in America to consider cases of rapidly advancing paralysis, whether fatal or not and regardless of pathological findings, as Landry's paralysis. He does not believe that the clinical course of a disease should be the sole criterion of its nature. All this, however, depends upon what limit we shall place upon the term Landry's paralysis. Taylor discusses the various diseases resembling poliomyelitis and then gives as his conclusions :

Adult poliomyelitis is a well-marked clinical affection, characterized by initial fever, rapid onset of usually extensive paralyzes, motor in type, with a tendency toward recovery, though often resulting fatally, from respiratory paralysis. The disease has frequently been confused with multiple neuritis and so-called Landry's paralysis. Its anatomical basis is a primary inflammation in the distribution of the ventral arteries of the cord, leading to a destruction of nerve cells. This inflammation is rarely sharply limited to the ventral horns, but extends into the dorsal gray matter, the surrounding white matter, and at times into the medulla oblongata. There is no sharp line to be drawn between these lesions and still more extensive ones giving rise to totally different clinical pictures—*e. g.*, encephalitis, polioencephalitis, polioencephalomyelitis. Anatomically, therefore, the disease is much less sharply characterized than it is clinically. Its final place must be determined by a study of its cause or causes, as related to various other degenerations and inflammations of the nervous system. From a practical point

¹ Journal of Nervous and Mental Disease, August, 1902, p. 449.

Of view it is well to consider those cases poliomyelitis which show a flaccid atrophic paralysis of sudden onset with definite anatomical changes limited to the ventral horns of the cord and their immediate vicinity.

It has been recognized that poliomyelitis may occur in childhood, and that later in life muscular atrophy may appear in parts which until then had shown no weakness. Such cases are, fortunately, very rare. It seems probable that the early poliomyelitis has left a weak spot although function has been restored, and that later in life the vitality of this weakened portion of the cord becomes less and degenerative changes begin. C. S. Potts,¹ in reporting a case of late atrophy following early poliomyelitis, has taken occasion to collect the cases of this character in the literature, and he has found 37. An analysis of these 36 cases shows that in 28 the secondary condition was probably one of progressive spinal muscular atrophy; in 2 amyotrophic lateral sclerosis; in 2 myelitis, and in 4 another attack of acute poliomyelitis. The interval elapsing between the primary and secondary attack ranged from seven years to about fifty-five years, the average being about twenty-three years. In 18 cases out of 33, in which this could be determined, the secondary atrophy began in a limb which had previously been affected by the primary disease; in 7 it began in a different limb, but on the same side as had primarily been affected; in 5 in the corresponding limb on the other side; in 2 in a different limb and on the other side, and in 1 the involvement was general, this being a case of a second attack of acute poliomyelitis.

The commencement of a late atrophy in a limb that had previously been affected in 18 out of the 33 cases seems to indicate that a *locus minoris resistentiae* was left by the primary affection, and is a strong argument in favor of this theory.

Polioencephalomyelitis. Occasionally the higher portions of the central nervous system become the seat of inflammation, and the lesions resemble very closely those of poliomyelitis, the symptoms differing from those of poliomyelitis because of the different situation of the lesions. Bulbar symptoms occasionally are associated with spinal symptoms, and then the diagnosis of polioencephalomyelitis is made. Such a case is reported by Alice Hamilton.² A child, aged five and one-half years, seemed somewhat indisposed on a Friday evening. The bowels were moved freely and she seemed quite well until the following Monday, when she vomited a number of times. On Tuesday the temperature was 102° F.; the vomiting still continued, the tongue was

¹ Univ. of Penna. Medical Bulletin, March, 1903, p. 31.

² Journal of Medical Research, June, 1902, p. 11.

protruded in an irregular and spasmodic fashion, the right side of the face was completely paralyzed, the voluntary movements of the hands were inco-ordinate, and slight nystagmus was present on lateral movement; her gait, however, was normal. Wednesday morning the pulse was 130; temperature was 102.8° F.; respirations were 48 to 50 and somewhat irregular. The right internal rectus was weak and mental hebetude had increased. Death occurred Wednesday afternoon.

It is very unfortunate that the spinal cord was not obtained, but sections were made from the lower end of the pyramidal decussation to the level of the anterior colliculi of the quadrigeminal bodies. The findings were: engorgement of the vessels of the gray and white matter, perivascular infiltration of round and oval cells in the gray matter, and to a less extent in the white matter; degeneration of nerve cells of the anterior horns, of the nuclei of the right seventh and the sixth nerves; engorgement of vessels and œdema of the brain.

This was evidently, as the author says, a case of primary acute inflammation, toxic in origin, and probably the spinal cord was similarly affected. Hamilton says she could find no case of such short duration reported in which degeneration of the nerve cells was found, but such a case has been published by Sherman and myself in 1900, and the alteration of the nerve cell bodies was intense and occurred within a very short time. In my portion of the paper just referred to I endeavored to show that poliomyelitis is not a process sharply confined to the anterior horns of the spinal cord, and that portions of the central nervous system above the cord may also be implicated.

Amyotrophic Lateral Sclerosis. According to K. Miura¹ no case of progressive bulbar paralysis without degeneration of the pyramidal tracts—*i. e.*, no case that is thoroughly reliable—is to be found in the literature. Miura reports a case of bulbar palsy in which the pyramidal tracts appeared to the naked eye to be normal, but under the microscope were much altered. Progressive bulbar palsy is, therefore, a form of amyotrophic lateral sclerosis, in which the muscles innervated from the medulla oblongata are first affected. Miura also has observed degeneration of the pyramidal tracts in amyotrophic lateral sclerosis extending from the cerebral motor cortex, which is very rarely seen, and in five cases that I examined was found only in one; and he has observed degeneration of the direct cerebellar tracts and of the vermis superior and corpus dentatum.

Spinal Caries. Paralysis from Pott's disease sometimes disappears if the patient is kept in bed, especially if fixation and extension are

¹ Mitteilungen der medicinischen Facultät der Kaiserlich-Japanischen Universität zu Tokio, 1902, vol. vi., No. 1.

used, but the case reported by Heubner¹ is interesting on account of a method of treatment employed in von Leyden's clinic. A child was paralyzed in all four limbs and was unable to stand or sit. The upper limbs were atrophied and flaccid, the lower limbs spastic, and the sixth and seventh cervical vertebræ were abnormally prominent. The paralysis of the upper extremities was probably the result of involvement of spinal roots, whereas that of the lower extremities must have been caused by implication of the spinal cord. Extension was employed with benefit so far as the upper limbs were concerned, but the lower limbs remained paralyzed and contracted. Warm baths were then employed, at first twice a week, then every other day, and finally every day, and the patient was urged to make movements of the lower limbs while in the water, as it is well known that voluntary motion is easier under water. The patient gradually acquired power in the lower limbs; at first the limbs could be moved only when they were under water, and in about eight months after treatment the first step with assistance could be taken. Within a year the patient could walk with ease. This method of treatment is worthy of trial in many cases of paralysis, and I have found it useful in a number of cases.

Fracture of the Spine. Traumatic lesions of the spinal cord without fracture of the vertebræ are seldom studied pathologically. A case that I² have observed was one in which this study was possible. A man fell out of a window and as a result was paralyzed in all four limbs, more so in the upper than in the lower. Within a couple of weeks after the accident he had regained much power in the lower limbs. The hands remained very weak, even until the death of the patient, which occurred thirty-eight days after the accident. A peculiarity of the case was the presence of dissociation of sensation—*i. e.*, preservation of tactile sensation with great impairment of temperature and pain sensations.

The transverse area of the spinal cord in this case seemed to be equally degenerated in the upper cervical region, and yet tactile sensation had been normal in all parts of the body, while temperature and pain sensations below the neck had been much altered. It seems, therefore, impossible to confine the tactile sensation to definite tracts, and we are almost forced to accept the view that all sensory fibres may transmit tactile impressions, while certain, more sharply differentiated fibres convey temperature and pain sensations. This view would explain the phenomena referred to, and would also explain why in cases of Brown-Séquard paralysis or hæmatomyelia tactile sensation is

¹ Berliner klin. Wochenschrift, August 25, 1902, p. 809.

² Univ. of Penna. Medical Bulletin, February, 1903, p. 483.

often preserved when temperature and pain sensations are much impaired.

The case that I have reported shows how impossible it is to distinguish clinically between hæmatomyelia and traumatic myelitis, although Minor believed that such a symptom-complex as in my case was diagnostic of the former.

The rapid restoration of power in the lower limbs was remarkable, in view of the great degeneration of the central motor tracts, as shown by the Marchi method. Many of the motor fibres must have escaped degeneration, and have assumed an unusual function. The case is important in showing how a limited number of nerve fibres may assume the function formerly discharged by many fibres.

The organic lesions of the spinal cord without fracture of the vertebræ were also important in this case. The degenerative changes within the cord were very intense, and they were not caused by compression or by intramedullary hemorrhage. This disorganization was the result of the severe trauma, and is what is meant by concussion of the cord, although the lesions of concussion are not always so intense. It is impossible to determine the exact method by which a severe blow leads to degenerative changes in the nerve fibres and nerve cells, but there can be no doubt that it does. It is well to remember that in some cases severe symptoms following trauma of the brain or cord are the result of organic changes within the nervous tissues, and are not always evidences of hysteria, although often they point unmistakably to the latter.

In this case there was diminution of the patellar reflexes from incomplete transverse lesion of the cord in the cervical region. This condition has become well known by the writings of Bastian and others, but the explanation is still to be given, at least for some of the cases.

Internal Spinal Hemorrhagic Pachymeningitis. The pathological process described by Charcot and Joffroy as cervical hypertrophic pachymeningitis is of rare occurrence. The disease is supposed to manifest itself clinically by constant pain in the back of the neck, radiating into the head and upper limbs, by rigidity of the neck, by paralysis and atrophy in the distribution of the median and ulnar nerves, by spastic paralysis of the lower limbs, anæsthesia, and vesical and rectal symptoms. While this is the typical symptom-complex variations may occur if the pachymeningitis is not in the lower cervical region. The symptoms are those of compression of the lower cervical nerve roots, and later of compression of the cord, and may be produced by anything capable of causing such compression, viz., tumor, tuberculous or syphilitic processes, or even syringomyelia. M. Probst¹ attempts

¹ Archiv f. Psychiatrie, vol. xxxvi., No. 1, p. 114.

to support the statement of those who hold that cervical hypertrophic pachymeningitis is only a part of a general implication of the central nervous system, as it certainly was in the first case he reports, in which hydrocephalus and internal hemorrhagic pachymeningitis were also present. He reports also another case with similar symptoms, in which cervical pachymeningitis does not appear to have existed, but in which the chief lesion was atrophy of the cerebral cortex. It is difficult to understand how this second case proves that cervical hypertrophic pachymeningitis is part of a general process implicating the central nervous system. That it may be in some cases is unquestionable, but it does not follow that in every case the process is as diffuse as in the first case reported by Probst.

Arteriosclerosis of the Spinal Cord. W. Hirsch¹ is correct when he says that arteriosclerosis of the brain is recognized and diagnosed during the life of the patient, but that arteriosclerosis of the spinal cord is a condition that is only rarely recognized. The literature on the subject is scanty, and most text-books do not mention it. Hirsch's paper, therefore, is important, and tends to create an interest in a condition that is not uncommon. He has carefully eliminated from his list all those cases in which even a suspicion of syphilis had to be maintained. Of course, a sharply-defined clinical picture cannot be given, inasmuch as the process is diffuse and the symptoms will vary according to the localization and intensity of the affection. Just as the clinical picture of spinal syphilis is characterized by the atypical complex of symptoms, so is arteriosclerosis of the cord a disease which may offer a great variety of clinical manifestations. In spite of this Hirsch believes there are certain clinical phenomena which will enable us to recognize this morbid condition of the spinal cord during life, and to differentiate it from other diseases of this organ. He thinks that the cells of the anterior half of the cord are much more likely to become affected than those of the posterior part, and this is owing to the peculiarity of the blood supply of the cord. As a consequence Hirsch has found motor and trophic disturbances much more frequent than sensory symptoms, and more common and more intense in the lower than in the upper parts of the body. The clinical picture as Hirsch gives it is as follows: The motor symptoms consist of gradually increasing weakness, characterized by fatigue after moderate exertion, such as standing or walking, combined with a slight tremor of the head and of the upper and lower limbs. The gross muscular power gradually diminishes more and more, the gait becomes draggy and difficult until finally in the more severe cases there is absolute inability to walk. Atrophy does not

¹ *Journal of Nervous and Mental Disease*, February, 1903, p. 74.

occur, as a rule, and the muscular tonus remains normal up to a late period of the disease. The patellar reflexes may be exaggerated at first, then become sluggish, and may be entirely lost in the later stages. A slight tremor of the lower extremities may cause a moderate swaying of the body in the standing position, which is not the same as the Romberg symptom. These may be the only symptoms of the disease for a long time. There are usually no sensory disturbances. The reflexes of bladder and rectum are normal. Sooner or later the other organs become affected in a similar way, and the patient may die from a cerebral hemorrhage or an intercurrent disease. This clinical picture is common in the aged, and has been considered a normal condition in them. Unsteadiness of upper and lower extremities and gradually increasing impairment of gait and muscular power seem so common in old people that, as Hirsch says, we are inclined to look upon these as natural phenomena, but there are many old people who do not manifest any of these symptoms, and again we meet with these symptoms at an early period of life; so that it seems hardly justifiable to consider this condition a physiological process even among the very old.

Hirsch describes trophic conditions manifesting themselves in malnutrition of the skin and of the mucous membranes, bones, and joints. Glossy skin is a frequent sign in these cases, and the nails may become brittle. The skin may ulcerate or become gangrenous. The long bones may become brittle and fracture easily.

It is undoubtedly true that it may be impossible to decide whether these trophic disturbances are really due to lesions of the spinal cord or to morbid changes in the peripheral arteries, and although there are many cases in which the peripheral vessels are in a perfectly normal condition it does not follow, as Hirsch seems to indicate, that the cause must be attributed to morbid changes in the trophic centres. At all events, these morbid changes are not detectable. I examined the spinal cord of a peculiar case of trophoneurosis without finding any pathological alteration of it.

The diagnosis of arteriosclerosis of the spinal cord in young persons is one of extreme difficulty, and when the condition occurs it is probably secondary to nephritis, lead intoxication, or some similar cause. Indeed, it must be extremely rare in the young, and it is probably true, as Hirsch says, that its clinical manifestations resemble those of systemic diseases, especially as sensory symptoms, though rare, may occur. Hirsch thinks these sensory symptoms may be produced by peripheral lesions. The symptoms of arteriosclerosis of the cord may resemble those of tabes. The history of the case, arteriosclerosis in other parts of the body, and the condition of the pupils are of diagnostic value, as the Argyll-Robertson pupil does not belong to arterio-

sclerosis. I am not inclined to agree with Hirsch if he means that a history of syphilis would turn the diagnostic scale in favor of tabes, because I believe that syphilis is probably one of the most common causes of arteriosclerosis.

Atrophy of the optic nerve in association with cerebral syphilis is explained by Hirsch in an ingenious way. This so-called idiopathic optic atrophy, not rare with cerebral arteriosclerosis, is explained by purely mechanical pressure. The optic nerve and the ophthalmic artery pass through the optic foramen in a common sheath. There are cases on record in which the necropsy showed thickening of the artery at this place, in consequence of which the nerve was compressed and atrophied. We can readily understand how arteriosclerosis of the nervous system can cause symptoms resembling those of tabes. Arteriosclerosis of the spinal cord will sooner or later be associated with the same change in other organs of the body.

Hirsch gives the report of a number of cases illustrative of arteriosclerosis of the nervous system, and what is also important he shows that this condition may be mistaken for neurasthenia.

Rabies. McCarthy and Ravenel¹ have given another interesting and important contribution to the study of rabies. They report two cases in man with necropsy, and the finding of the lesions common in rabies. They have had submitted to them for examination 105 animals suspected or known to be rabid. Of these 75 were dogs, 11 cows, 2 horses, 2 cats, and 15 rabbits. In 83 cases the clinical symptoms and history were positive of rabies; 40 cases were controlled by the inoculation of rabbits. In only 2 cases were they unable to find the lesion of Babes in the medulla oblongata when the changes in the ganglia were marked, but in several the bulbar lesion was slight. They urge that dogs suspected of having rabies should if possible be allowed to live long enough for the lesions to develop, as in one-third of the cases where the animal is killed prematurely no diagnosis can be made, except by inoculation with the attendant delay. The value of microscopic examination is shown by the fact that in 87 of their 105 cases they were able to give a prompt diagnosis by examination of the ganglia alone, and in 94 by an examination of the ganglia or medulla oblongata. The clinical history should always be taken into consideration in making the diagnosis. They remark that they know of no acute disease in dogs presenting the proliferation of the capsular cells and the tubercle of Babes, and that they consider these lesions as diagnostic of rabies in conjunction with a history of an acute clinical course of the disease. Rabies is as distinctly a clinical entity with as distinctive pathology as syphilis or tuberculosis.

¹ Journal of the American Medical Association, March 21, 1903, p. 753.

Landry's Paralysis. Theodore Diller¹ follows very closely in the footsteps of Taylor and Clark when he shows the uncertain foundation on which Landry's paralysis rests. No one can doubt that acute ascending paralysis exists, and with little or no disturbance of sensation, electrical reactions, or of the functions of bladder or rectum; that in these cases the tendon reflexes may be lost, and that death may occur early. To this extent we acknowledge the existence of Landry's paralysis; but suppose in modification of this symptom-complex sensation is much altered and pains are felt, or the vesical and rectal sphincters are affected, is the case then one of Landry's paralysis? Shall we say, as E. W. Taylor does, that those cases in which the symptom-complex of Landry's paralysis is present, but the microscopic examination reveals myelitis or meningomyelitis, are not cases of Landry's paralysis, but of poliomyelitis? The symptom-complex as mentioned above is so striking that we must have a name for it. What shall we call it? Acute ascending paralysis would be satisfactory if the paralysis were always acute. Perhaps if we are willing to acknowledge that the symptom-complex must not be too sharply drawn we may employ the term Landry's paralysis without much danger of being misunderstood. Certainly we cannot use a name having reference to the pathology of the affection, because, according to some, it has no pathology, and all cases of acute ascending paralysis are not produced by multiple neuritis.

Diller reports three atypical cases which he believes should be classified as Landry's paralysis. They were alike in that they all exhibited a rapidly ascending motor paralysis without elevation of temperature or mental symptoms. In all of them sensory symptoms were present, which in two of the cases preceded the motor symptoms, and none had a fatal issue. The first case was noteworthy, inasmuch as the course of the affection was comparatively mild, the patient probably never having been off his feet. The second case was one in which, after three days of soreness in the legs and thighs, loss of muscular power suddenly developed in these members, followed very shortly by similar involvement of the arms. This loss of power rapidly developed until it became almost complete, remained stationary for a week, and then rapidly diminished. Two unusual features of Landry's paralysis were the preservation of the knee-jerks, although they were lessened, and the reaction of degeneration. The third case does not, in my opinion, belong under this heading at all. Syphilis seemed certainly to be the cause; sensory symptoms, severe pains, were felt in the lower limbs, then in the back, and then in the upper limbs, and later weakness was observed. The patellar reflex was exaggerated and later lost, and

¹ Journal of Nervous and Mental Disease, October, 1902, p. 577.

bladder symptoms were present. To include such a case as this, evidently one of syphilitic meningomyelitis, under Landry's paralysis, would be to make confusion complete, and in reference to this case I refer to one reported by C. K. Mills and myself with necropsy, discussed elsewhere in this review. It is possible that syphilis might cause the symptom-complex of Landry's paralysis, but almost always sensory symptoms are pronounced in Landry's paralysis. Then, again, a person who has had syphilis might have Landry's paralysis independently of the syphilis.

DISEASES OF THE NERVES.

Facial Palsy. Cassirer¹ has found that when the reaction of degeneration is very marked in facial palsy mechanical irritation of the muscles of the face for about half a minute will cause tonic contraction of these muscles. The irritation may be applied by repeated blows of the percussion hammer. The contraction lasts about a minute after the blows have ceased. Sticking with a pin or a strong faradic current did not cause the contraction, nor did any irritation of the nerve. The slow contraction following a single blow of the hammer when the galvanic irritability of a muscle is increased is known, but no reference is made in the text-books to the tonic contraction caused by repeated mechanical irritation and persisting after the irritation has ceased, and disappearing as the reaction of degeneration disappears. This curious phenomenon was observed, however, by Hitzig and described by him, and then forgotten by others. He described it as proportional to the increased galvanic irritability. Bernhardt spoke of tetanus of the muscle produced by quickly repeated percussion of its nerve, and Babinski of tonic spasm produced by a rapidly interrupted faradic current passed through the muscle, but neither of these is what Cassirer describes, his phenomenon depending alone on rapidly repeated *mechanical* irritation of the *muscle* only. He has not found this phenomenon in cases of slight facial palsy, or in old cases with contracture, or in very recent cases before reaction of degeneration has had time to appear. He has not seen it in peripheral paralysis other than that of the face.

Paralysis of the muscles supplied by the facial nerve is very common and is often described as "rheumatic," but examination of the nerve affected in this "rheumatic" palsy seems to have been made in only two cases (Minkowski, Dejerine and Theohari). Minkowski found advanced degeneration of the nerve in its peripheral portion and in the lower part of the Fallopiian canal, and the degeneration could be

¹ Centralblatt f. Nervenheilkunde und Psychiatrie, 1902, xxv.

detected, although in less intensity, as high as the geniculate ganglion, but not beyond. There was no evidence that the degeneration was caused by inflammatory swelling of the tissues about the nerve within the Fallopian canal. The process appeared to be a degenerative neuritis caused by some action of the cold upon the nerve fibres, and Dejerine and Theohari's case was similar. The facial nerve has been examined in a few cases of paralysis from other causes. A third case of the "rheumatic" facial palsy is now reported by G. Alexander,¹ and is very similar to the two already mentioned. He emphasizes the absence of inflammation or of any pathological condition within the tissues of the bony canal. Although no bacteria were found, Alexander believes that the process was of bacterial origin and that the exposure to cold merely acted as a predisposing cause.

Facial Diplegia. Congenital facial diplegia, especially with necropsy, is so very uncommon that the case reported by Harry Rainy and J. S. Fowler² is well worthy of attention. The child, aged ten weeks, had complete paralysis of both seventh nerves, and the face was practically motionless and devoid of expression when the child cried, except that there was contraction of the fibres of the occipitofrontalis just above the extreme inner angle of the right eye, and of the right depressor anguli oris. The upper lip protruded somewhat, while the lower one fell and was drawn slightly downward and toward the right side. When a finger was put into the mouth the lips hung loosely around it, and were pushed in before it, making no effort to close on it, although when it entered the mouth the jaws could be felt to clinch and sucking movements of the tongue occurred. The eyelids at first were not closed very tightly, especially on the left side, but later the closure of the lids became more perfect. The movements of the eyeballs were normal, but sluggish. The masseter and orbicularis palpebrarum responded feebly to both the faradic and the galvanic currents, but no other facial muscle responded to either. On the second examination there was no response on the part of any of the muscles supplied by either seventh nerve to any form of stimulus. The child died a few days after admission to the hospital.

The seventh were the only nerves affected, and these were much degenerated, as shown by the Marchi stain, and the nuclei of these nerves were very imperfectly formed.

This case is of the greatest importance, because it shows that the congenital facial paralysis was central in origin and not the result of muscular dystrophy. The few fragments of muscle that could be found appeared normal when examined, and it seemed probable that they

¹ Archiv f. Psychiatrie, vol. xxxv., No. 3, p. 778.

² Review of Neurology and Psychiatry, vol. i., No. 3, p. 149.

were associated with the few surviving nerve cells and nerve fibres of the seventh pair. The case showed, also, that the condition was not one of aplasia or hypoplasia of the implicated parts, because degenerated nerve fibres were present, and there must have been at an earlier stage nerve cells in which they had origin. The conclusion which was made concerning this case was that, either through lack of inherent vitality or through defective nourishment, or through the gradual action of some noxious influence which may have been of a toxic nature, the cells slowly perished, leaving evidence of their former existence in the degenerated nerves and the atrophied muscles which they formerly controlled.

This subject of congenital nuclear disease—*i. e.*, degeneration or hypoplasia—has been studied especially by Möbius. In some cases paralysis of the external ocular muscles is associated with the facial palsy. Rainy and Fowler recognize the importance of Möbius' work, but they have evidently overlooked the valuable and interesting cases published in this country a few years ago by H. M. Thomas. It is true that the latter's cases were without necropsy, but nevertheless they were of much interest.

Neurofibromatosis. Fibromatosis is more common in the peripheral nervous system than in the central, and seldom is found within the dura. The reason for this is not very clear. Multiple fibromata of the roots of the cranial nerves are found less often than fibromata of the spinal roots, and these tumors may cause few symptoms, inasmuch as they may exist for a long time without causing compression. Cutaneous fibromata may in some cases be smaller and fewer in number than those implicating the central nervous system. Henneberg and Koch¹ report two cases of central neurofibromatosis. They call attention to the frequent implication of the acoustic nerve, so that a fibroma is found on each side of the pons. They believe that the sensory nerves are more liable to be the seat of the fibromatosis than the motor. In one of their cases fibrosarcomata and fibropsammomata were found in the cerebral membranes, and in the other case a small fibroma was found within the spinal cord. Proliferation of the neuroglia in the form of sclerotic areas or gliomata has been observed in some cases of neurofibromatosis, which is interesting, as the neuroglia is also a supporting tissue. Henneberg and Koch discuss the occurrence of tumors (fibromata, sarcomata, fibrosarcomata in the angles made by the union of pons and cerebellum. These tumors appear to have their origin in the eighth, fifth, or seventh nerve, or even in the ninth and tenth. Although neurofibromatosis often is inherited, no tendency to inherit-

¹ Archiv f. Psychiatrie, vol. xxxvi., No. 1, p. 251.

ance of fibroma formation of the pontile region has been observed. Henneberg and Koch discuss the symptoms produced by a tumor in this location. Disturbance of hearing is often but by no means a constant early symptom. Headache may be in the occipital region or it may be in the frontal, and on the side of the tumor or on the opposite side.

The symptoms observed in the different cases have varied very considerably, and the diagnosis is often difficult, to which I can testify. C. K. Mills and I some time ago observed a case in which a fibroma was found at the juncture of the pons with the cerebellum, and it was extremely difficult to say from the clinical signs whether the tumor was in the cortical motor area or at the base of the brain.

MULTIPLE FIBROMATA OF A NERVE. Multiple fibromata confined to a single nerve have rarely been seen. W. J. Taylor¹ has had a case of this kind observed by him since 1888. When the girl was about sixteen years of age she sprained her left ankle, and since then it had always been weak and had a tendency to turn inward. In 1881 she began to suffer from pain and soreness in the sole of the left foot and inner side of the ankle. At first this was noticed only upon pressure, but gradually it grew worse, until she could hardly stand upon the foot or sit with the foot in a dependent position. The pain at that time was not so severe on walking, but the foot was only free from pain when she was lying down. Her work had required much standing. The pain became localized, and was confined to spots along the inner side of the foot and ball of the great toe. After an attack of unusually severe pain the foot would swell and become red. In 1888 many masses could be felt along the inner side and sole of the foot, the masses varying in size from that of a hickory-nut to that of a small pea, and they followed the distribution of the internal plantar nerve. They were movable, hard, intensely painful to the slightest touch, and some of them seemed to be immediately beneath the skin. About ten separate masses could be distinctly outlined. At times they became red and inflamed. They were so sensitive that the slightest touch would cause agonizing pain. The perspiration in the foot was very free, and after any manipulation it would stand out in beads all over the skin.

In 1888 thirteen small tumors were removed from along the line of the distribution of the internal plantar nerve. They were shelled out from beneath the skin with the greatest ease, and were firm in consistency.

In 1890 the patient was readmitted to the hospital. She had been

¹ *Journal of Nervous and Mental Disease*, April, 1903, p. 204.

much better for a year after the first operation, but the pain had returned. Two tumors were removed. In 1897 six tumors were removed. They were fibromata. The pain still persisted, and in 1902 five small tumors, one large one, and about five inches of the greatly swollen plantar nerve were removed, and since this last operation the patient says she is perfectly well.

The tumors removed at the last operation were examined by me and were found to be fibromata, and exactly like those removed by W. W. Keen in one of his cases. No nerve fibres were found in these tumors, except such as had not become degenerated by pressure of the fibrous tissue. One tumor was dependent from the large nerve trunk by several bands of partially degenerated nerve fibres. It is important to note that in this case repeated operation had not caused sarcomatous degeneration.

Optic Neuritis in Diphtheria. Optic neuritis occurring in diphtheria, according to Charles Bolton,¹ has not been reported except in the two cases published by him. In his first case no albumin was found in the urine, and, therefore, nephritis could be excluded as a cause. The neuritis appeared and disappeared under observation while the child was suffering from diphtheritic paralysis. It was less intense in the eye in which the greater degree of hypermetropia existed, and could not have been mistaken, therefore, for the condition simulating it, which may be seen in hypermetropia. In both cases the neuritis was not very great, and the duration was about two months. In the first case the neuritis appeared during the fourth week of the disease, and in the second probably about the third or fourth week.

Oculomotor Palsy. In a remarkable case reported by Frankl-Hochwart² paralysis of the right oculomotor nerve in its distribution to the external ocular muscles occurred rapidly without any cause that could be determined. The inner muscles of the eye were not affected. The lesion was found to be a neuritis, and the nucleus of the nerve was almost intact. This finding is important, because a partial paralysis has been thought by some to indicate an alteration of the nucleus of the nerve—a view which seems to be incorrect. The microscopic examination of the nerve also revealed no detectable cause for this neuritis.

Total unilateral oculomotor paralysis from aneurism of the internal carotid, as in E. Lindner's³ case, is of rare occurrence. The patient, a woman, aged forty-two years, had suffered from unilateral or more general headache occasionally. The oculomotor palsy developed after

¹ Lancet, December 13, 1903, p. 1624.

² Obersteiner's Arbeiten, vol. ix. p. 323.

³ Wiener klin. Wochenschrift, 1902, p. 1193.

an attack of headache with vomiting, so that the symptom-complex was much like that of the recurrent oculomotor palsy. Although in most cases the headache ceases when the paralysis appears, in Lindner's case it persisted. The nerve palsy was of the same intensity from the beginning, and implicated all branches of the oculomotorius. It seemed probable that the lesion was at the base of the brain. In all cases of recurrent oculomotor palsy with necropsy yet reported basal lesions have been found. In Fiedler's case of aneurism of the carotid the palsy increased in successive attacks until it became complete, and in this respect the two cases differed.

Lindner discusses the symptoms of *cerebral aneurisms*. The symptoms may develop suddenly and may vary in intensity from time to time, or may be persistent and unaltered, or the aneurism may be latent until rupture occurs. Other cranial nerves may be implicated. In some cases the optic nerves are normal; in others optic neuritis is found. Subjective noises in the head are sometimes most annoying, and may be constant or occur at intervals, and especially when the patient is lying down, so that he is obliged to sit up at night. These noises may sometimes be heard by the examiner, and may be lessened by compression of the carotid. Headache is a frequent symptom, and vertigo and vomiting also may be complained of. A cerebral aneurism is known to have existed for eleven years, but the symptoms may be present only a few days.

Paralysis of the Pneumogastric and Vagus Nerves. Paralysis of the pneumogastric and glossopharyngeus nerves on one side at the base of the brain seldom occurs, but when it does it affords an opportunity for investigating the function of these nerves. A case of such paralysis has recently been studied by me.¹ A man fell about eight feet from a car, striking on the top of the head. There was no detectable fracture of the skull, and no paralysis of the limbs. He was unconscious fifteen or twenty minutes after the fall; he then got up and walked a short distance. He was not able to swallow at all after the accident. The tongue when protruded was said to deviate a little to the left. His condition twenty-six days after the accident was as follows: Sensation for touch and pain was intact in the limbs and trunk; the grasp of each hand was normal; no loss of motor power was detected in any of the limbs; the patellar reflex on each side was almost normal; ankle clonus and Babinski's reflex were not present on either side; the station and gait were normal; the tongue was protruded straight and showed no atrophy and no fibrillary tremors; the soft palate was a little better innervated on the right side than on the left; the pharyngeal reflex

¹ Univ. of Penna. Medical Bulletin, March, 1903, p. 13.

was preserved on each side ; salt and sugar were tasted correctly and promptly on the anterior two-thirds of each side of the tongue ; the facial muscles were not implicated ; there was complete paralysis of the left half of the larynx, absolute immobility of the left vocal cord and arytenoid cartilage and moderate amount of simple inflammatory infiltration.

There has been much doubt regarding the effect of injury of one vagus upon the heart and lungs. Opinions have varied considerably. The respiratory rate in my case was about normal, but the pathological findings in the lungs were exceedingly interesting. The left lung was voluminous, and numerous nodules of increased consistency and averaging 1.5 c.c. in diameter were felt. The lung was congested, and small areas of consolidation resembling those of bronchopneumonia and some with breaking down in the centre and abscess formation were found. The abscesses were about the size of a split pea. A similar condition was found throughout the middle lobe of the right lung, and the right upper and lower lobes were congested. The man had been nourished by nutrient enemata, so that saliva alone could have passed into the trachea. It seems reasonable to attribute the pulmonary condition to the paralysis of the vagus nerve.

No distinct alteration of the heart in my case was found as a result of paralysis of the vagus, but the pulse was a little accelerated. The man was kept very quiet, and yet the pulse at times was as high as 104, 96, or 92 when he came under my observation four weeks after the accident.

I was able to show in this case at least that the taste fibres of the anterior two-thirds of the tongue did not pass by the ganglion oticum, the petrosus superficialis minor, the plexus tympanicus, the ganglion petrosum, the glossopharyngeus to the brain. I was able also to find degeneration of the taste buds in the circumvallate papillæ on the side on which was the degenerated glossopharyngeus. This is only the second time that these taste buds have been found degenerated in man after a lesion of the glossopharyngeus.

I have concluded from a study of this case that the sensory distribution of the pharynx cannot be confined to the glossopharyngeus, and that the innervation of the soft palate is, in part, by means of the glossopharyngeus or vagus.

TASTE FIBRES. Gowers¹ believes that the *taste fibres* for both the back and the front of the tongue enter the brain through the fifth nerve, and the evidence he offers for this view is that afforded by the loss of taste on the operated side in five cases in which the Gasserian

¹ Journal of Physiology, July 21, 1902.

ganglion was removed. In one case he found, a week after the operation, that taste seemed to be retained, and yet three weeks later it was unquestionably absent. In still another case a week after the operation the evidence of persistent sensibility in the face seemed so definite to the most careful examination that the wound was reopened, the brain raised, and the cavity looked into to see if any part of the nerve remained. It was empty, and was not touched. After recovery from this second operation no trace of sensibility could be found on repeated testing during many months. The explanation for these remarkable phenomena Gowers offers is the following: There is probably a communication between the terminal branches of the two sides of the face, which varies in degree in different persons. The impulses generated by excitation of the nerves near the middle line on the operated side may possibly reach the brain by means of this peripheral communication, but the gradual degeneration of the nerves on the operated side renders conduction later impossible. This explanation seems to me very doubtful, because in a case in which at my suggestion the sensory root of the Gasserian ganglion was cut, and the peripheral fibres probably did not degenerate, inasmuch as the Gasserian ganglion was left *in situ*, sensation in the face on the operated side was completely lost.

The recent investigations on the taste fibres by Harvey Cushing, to which I have not space to refer in detail, also make Gowers' opinion doubtful.

Pathology of Tic Douloureux. Sidney I. Schwab¹ has made an important contribution to the pathology of tic douloureux. He has examined six Gasserian ganglia removed for the relief of this affection, all from cases of the most severe form of the disease, and in three there had been no peripheral operation to complicate the microscopic findings. All of the ganglia were removed satisfactorily, and prepared while fresh. Accidental sources of error were therefore removed as far as possible. Schwab says that as a result of a study of these specimens there is little doubt in his mind that the principal cause of all the symptoms is in the diseased condition of the Gasserian ganglion. The proof is found in the complete disappearance of symptoms after removal of the ganglion or division of the sensory root. He thinks that the cell changes in the ganglia which he describes are not the cause of the pain, but are either the effects of an abnormal or a greatly exaggerated cell activity. Whether or not these cells are primarily concerned in the production of pain is a question he does not attempt to answer positively, although he gives as his opinion that they probably are so concerned. He also cannot find the cause of the pathological activity of the nerve cells, but

¹ Journal of Nervous and Mental Disease, February, 1903, p. 88.

he suggests that there may be some toxin circulating in the blood which has a selective action on the cells of the Gasserian ganglion, or that the nerve cells themselves originate the toxin owing to some abnormal cell activity. The nature of the toxin is unknown. In this connection I would allude to the fact, first noticed by myself, I think, that most cases of tic douloureux are right-sided, and that this may suggest a vascular origin.

Neuritis after Typhoid Fever. According to K. Liepelt¹ there are 17 cases of isolated ulnar paralysis following typhoid fever reported in the literature, his own case making the seventeenth; 12 of these cases are made the subject of special study by Liepelt. In 9 of these 12 cases the paralysis began in the convalescence from typhoid fever. Pain was an early symptom in 8 cases, and the electrical irritability of the affected muscles was diminished in 11 cases. Atrophy was present in 9 cases, and diminution of sensation was found in most of the cases. In 3 cases recovery and in 3 improvement occurred.

Enlargements of Limbs after Neuritis. Hans Hirschfeld's² statement that before the publication of his paper enlargement of the hands and feet as a result of neuritis was unknown in the literature is probably correct. He thinks this symmetrical enlargement is allied to the hypertrophic osteoarthropathy of Marie, erythromelalgia and acromegaly. The soft tissues alone are affected and the enlargement is associated with pain, oedema, and cyanosis of the affected parts, and claw-like finger-nails. The end phalanges are more thickened than the others. The nerves of the extremities may be tender to pressure. Two of Hirschfeld's patients had an ulcerated carcinoma of the œsophagus and one ulcerative phthisis. A study of the tissues in one of the three cases revealed interstitial neuritis of the extremities. It remains to be determined whether the hypertrophic osteoarthropathy of Marie is also associated with neuritis of the extremities.

Brachial Plexus Palsy. It seems very strange that some nerves are much more likely to recover after injury than others, but that this is true is shown by L. Bruns.³ After carefully sifting his cases he finds 47 of paralysis of peripheral nerves and 23 of paralysis of the brachial plexus from trauma without complete division of the nerve fibres. These 70 cases were observed by him during long periods. Injury of the musculospiral nerve he finds has an especially favorable prognosis, even aside from pressure palsy. All his cases of pressure palsy of this nerve recovered, and in 10 cases of palsy of this nerve from fracture only 3 did not recover. The recoveries in musculospiral

¹ Berliner klin. Wochenschrift, July 7, 1902, p. 636.

² Zeitschrift f. klin. Med., 1902, vol. lxiv.

³ Neurologisches Centralblatt, 1902, No. 22, p. 1042.

palsy from trauma he finds amount to 87 per cent. In 4 cases of serratus palsy there was only 1 recovery; so that this form of paralysis has a more serious prognosis. In his 23 cases of brachial plexus palsy there were only 6 recoveries, or 26 per cent., as compared with 66 per cent. of recoveries in nerve palsy. The cause of the unfavorable prognosis in brachial plexus palsy is unknown, but it is possible that the pulling and tearing of the nerve fibres of the plexus affects the spinal cord. This explanation, however, does not appear entirely satisfactory.

Toxic Neuritis. In alcoholic or other forms of toxic neuritis the degeneration is not confined to the peripheral nerve fibres, and S. J. Cole¹ seeks to give evidence in support of those who hold that the disease is a widespread affection of the whole nervous system. He has made a pathological examination in three cases of alcoholic neuritis, and one of the important facts he attempts to prove is that the central changes are not attributable to the peripheral neuritis, and though in some cases the peripheral nerve fibres are mainly affected, in others the morbid process chiefly implicates central nerve fibres; but these two groups of cases do not appear to be sharply divided. The nerve cells of the cerebral cortex were altered in Cole's cases, and this alteration may explain the psychosis existing in polyneuritis, especially in the alcoholic variety, and consisting chiefly of mental confusion, with disorder of observation and loss of memory for recent events. Cole also found degeneration of nerve fibres within the brain in his cases.

SULPHONAL NEURITIS. Neuritis following the use of sulphonal has not been observed often, and comparatively little is known concerning it. We, therefore, are glad to have the report of a case by W. Erbslöh² carefully studied clinically and microscopically. A woman afflicted with carcinoma and weakened by loss of blood received during five days ten grammes (150 grains) of sulphonal on account of inability to sleep. Five days after having taken the last dose pain was felt in the muscles of the calves, and weakness began, the hands and feet being less affected. Sixteen days after the first signs of paralysis appeared death from paralysis of the muscles of respiration occurred. Mental symptoms were present. The nerves were found diseased, more especially in their peripheral portions; from which findings Erbslöh concludes that the process began in the distal ends of the nerves and gradually ascended. The case was evidently one of sulphonal multiple neuritis, and it is not unlikely that the carcinoma of the uterus and the loss of blood that had occurred rendered the nerves more susceptible

¹ Brain, vol. xxv., No. 99, p. 326.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xxiii., Nos. 3 and 4, p. 197.

to the sulphonal, but it is not probable that carcinoma and anæmia alone were the causes of the nerve degeneration.

ARSENICAL NEURITIS. Arsenical neuritis developing as rapidly as in a case reported by J. Kron¹ is very remarkable. A woman was ordered arsenical pills for headache on November 6th. On November 7th and 8th she took several pills, and toward evening on November 8th she complained of paræsthesia in the legs and back, and of severe pain during the night. The next day she became paralyzed in the lower limbs. It is not known how much arsenic was taken within these few days. Gastrointestinal symptoms are usually prominent in arsenical poisoning, but were insignificant in this case. The absence of vomiting and diarrhœa may have hastened the development of the symptoms. The prognosis of arsenical paralysis is good. Of 130 cases paralysis of the legs persisted in only 2, according to Alexander, and even these patients may have recovered later. One should never despair in treating multiple neuritis from any cause, even though the paralysis may persist many months. I have recently had a case of complete alcoholic paralysis of the lower limbs in which restoration of motor power occurred after a period of about five months.

NEURITIS FROM HYDROFLUORIC ACID. Some time ago a man came to my clinic at the Polyclinic Hospital with complete musculospiral palsy on the right side and with very little power of flexion in the right hand. Flexion of the left hand was good, but extension of this hand was impaired. He was sensitive to slight pressure over the muscles of the forearms and hands. Fibrillary tremors were very marked in the left upper limb. Two months after he first came to the clinic the response to the galvanic current in the extensor muscles of the right hand was very imperfect, scarcely any contraction being obtained by the strongest current. The man gave the history of having had his hands exposed to some form of acid during two or three days in etching glass. His right hand had come in contact with the acid more than the left, and the paralysis in this hand was the greater. The physician, Dr. Lupin, who had treated him when the paralysis first occurred, said that the man's hands were swollen, hard, and white, and that there was no sensation in any part of them. I was called as witness for the plaintiff, and testified that as the man had been said to be healthy before his hands were exposed to the acid, a condition such as he had after the exposure was sufficient to justify the belief that the nerves of the parts were affected, as well as the other soft tissues. It would be difficult to explain why the nerves should escape when the alteration of the hands was so intense. The possibility of neuritis being produced

¹ *Neurologisches Centralblatt*, October 16, 1902, p. 930.

by exposure of the skin to an irritant fluid has been shown by Köster.¹ The suit was decided in favor of the plaintiff. '

D. J. McCarthy² has conducted a valuable series of experiments to determine with what frequency neuritis occurs after the skin has been exposed to irritant substances. His interest in this subject was awakened by the above-mentioned case. He has found that an intense and extensive degeneration of the nerves, the result of an acute inflammatory process, may be produced by local application of formalin to the skin without destroying the continuity of or seriously interfering with the structure of the superficial tissues.

The action of hydrofluoric acid (which was supposed to have been used in the case above mentioned) when locally applied does not differ essentially from other corrosive poisons. In weak solutions it may cause degenerative changes in the deep nerves, with minor necrotic lesions in the subcutaneous tissues, without destroying the continuity of the integument. This is an important observation.

The effect of carbolic acid in strong solutions is confined mainly to the superficial tissues, and it is only when these tissues are extensively involved (dry and hard, although there may be no blistering or ulceration) that the subcutaneous and deeper nerves become degenerated.

Acetate of lead produces irritative changes in the skin somewhat similar but less intense than that produced by carbolic acid, without involvement of the subcutaneous tissues or nerves.

These careful experiments and conclusions of McCarthy are exceedingly valuable. He points out wisely that when paralysis is produced by a poison which may have a constitutional effect it may be difficult to determine whether this paralysis is the result of the application of the poison to the part affected or whether the location of the paralysis is the result of the selective action of the poison after it has been absorbed into the system. McCarthy believes as a result of his investigations that it is quite possible for certain poisons to penetrate the superficial tissues and cause inflammatory and degenerative changes in the deeper nerves without destructive lesions of the overlying tissues. If such changes of the nerves may occur without lesions of the overlying tissues, it is certain that they are more likely to develop when the surrounding tissues are much diseased.

Regeneration of Nerves. E. Münzer³ has endeavored by experimentation to determine whether Berthe is correct or not in the views he has expressed regarding regeneration of nerves, and he concludes that nerve fibres are found in the peripheral stump of a divided nerve

¹ See my article in *PROGRESSIVE MEDICINE*, September, 1901, p. 234.

² Univ. of Penna. Medical Bulletin, March, 1903, p. 89.

³ *Neurologisches Centralblatt*, December 1, 1902, p. 1090.

a long time after the division has occurred, even though union with the central stump has not occurred. The central end of the peripheral stump swells after division, and this swelling is in intimate connection with the nerve fibres about it. The nerve fibres in the peripheral stump arise in this swelling, so that the correctness of Berthe's views regarding the independence of the nerve fibres in the peripheral stump is not established, according to Münzer.

Spinal Localization of Nerves. The experiments of Bikeles and Franke¹ show much ingenuity. It has always been a matter of dispute regarding the representation of the peripheral nerves in the spinal cord. It has been found that when nerves in animals are cut degeneration of the posterior root fibres occurs, even after these fibres enter the spinal cord—i. e., a degeneration in fibres on the central side of the spinal ganglia occurs, although the lesion has been on the peripheral side. Bikeles and Franke have employed this knowledge to determine the situation within the posterior columns of the fibres entering the cord from the musculospiral, median, and ulnar nerves, and have used for this purpose rabbits, dogs, and cats. When these three nerves were cut in the axilla degeneration of fibres entering at the seventh and eighth cervical, and to a less extent at the first thoracic segment, was found. These three segments, and possibly to a slight extent the sixth cervical segment in the dog and cat, are the chief points of entrance of sensory fibres into the cord from the musculospiral, median, and ulnar nerves.

When the median nerve alone was resected above the elbow it was found that the representation of the sensory fibres of this nerve in the spinal cord was in the seventh and eighth cervical and to a less extent in the first thoracic segment. The ulnar nerve is represented in the eighth cervical and to a less extent in the first thoracic segment. The sensory musculospiral fibres probably enter the cord in rabbits at the seventh and eighth cervical and first thoracic segments; in cats at the seventh and eighth cervical segments, and possibly to a slight extent at the sixth cervical segment.

A study by the Nissl method has shown Bikeles and Franke that in the dog the motor fibres of the musculospiral nerve arise in the seventh and eighth cervical and first thoracic segments; those of the median in the eighth cervical and first thoracic, and those of the ulnar in the eighth cervical. These attempts at spinal localization are very valuable, because by knowledge of the spinal representation of nerves we may more accurately determine the situation of a lesion and the point of surgical intervention.

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxiii., Nos. 3 and 4, p. 203.

Neuritis and Progressive Spinal Muscular Atrophy. Stanley Barnes¹ has observed seven cases presenting a clinical picture similar in many respects to that of multiple neuritis, and yet resembling progressive spinal muscular atrophy. When the cases came under observation marked atrophy of the small muscles of the hands was seen, together with weakness of the extensors of the wrist and of the flexors of the ankle. The atrophy of the small muscles of the hand in five of the cases was intense. In the more severe forms there was no reaction to the faradic current in the hand muscles, and there was diminished reaction in the extensor group of the forearms and in the flexor group of the ankle. The atrophic paralysis was of the peripheral type, in which the most distal muscles were most affected. In none of the cases did the muscles especially affected correspond to the distribution of peripheral nerves, but the atrophy resembled that resulting from lesions of the spinal cord. Distinct contracture was not present in these cases. In all the cases sensory changes, though present, were comparatively slight, but in one case definite objective anæsthesia was observed. All but one of the patients complained of numbness in the extremities at some period of the disease, but, as a rule, this sensation was only temporary. The most prominent sensory sign in all the cases was tenderness of the muscles and tenderness on pressure over the nerve trunks in the limbs. The sensory changes were similar to those of alcoholic multiple neuritis, but were less severe at all periods of the disease. Only in one case was there implication of the sphincters of bladder and rectum, and bulbar symptoms also occurred in this case. None of these cases were seen in the early stages. Barnes thinks that in the first manifestation of symptoms many of the cases resembled Landry's paralysis, on account of the rapid spread of paralysis from the periphery to the central muscle groups, the slight sensory signs, the slight involvement of the sphincters, and the absence of tendency to the formation of bed-sores. He says that these cases differed from most of those due to multiple neuritis in the great atrophy of the intrinsic muscles of the hands; the comparative slowness of sensory changes; the absence, as a rule, of contractures, and the integrity of the psychical condition. However, the mentality is by no means affected in all cases of multiple neuritis, and we recognize a motor form of this disease with little sensory disturbance. Barnes' cases seem to resemble the Charcot-Marie type of atrophy. In all the cases there was gradual but constant improvement, so that even the hand muscles filled out again after being much wasted. This is like neuritis and unlike spinal-cord disease.

Barnes gives as his conclusions from the study of these cases that

¹ *Brain*, 1902, vol. xxv. p. 479.

there is a clinical type, usually following acute specific fevers, and resembling the paralysis of multiple neuritis, but associated with great atrophy of the hand muscles. It usually begins about the second or third week after the fever, and involves the muscles from the periphery to the trunk in varying extent. It may progress for a few days only or for several months. Sensory signs are slight. The prognosis and etiology distinguish it from progressive spinal muscular atrophy. After a certain stage when definite improvement has begun, relapses are not common, and improvement may occur years after the subsidence of the acute condition. Contractures are rarely developed. The condition is believed by Barnes to be one of toxic degeneration of the lower neurones, especially of the lower motor neurones.

A necropsy was obtained in only one of his seven cases. The muscles were found much atrophied, the nerves much degenerated, and the nerve cells of the anterior horns in the cervical and lumbar enlargements were altered. The patient, who died, had what Barnes describes as relapsing Landry's paralysis.

Paræsthetic Meralgia. This peculiar disturbance of sensation in the outer part of the thigh is now well known to neurologists, but probably there are still many physicians who are not familiar with it. The symptoms are anæsthesia, paræsthesia, and pain in the distribution of the external cutaneous nerve of the thigh, appearing only when the patient is walking or standing. In at least four cases the sensory disturbance has been so great that resection of the affected nerve has been done, and as a result of the operation the pain has disappeared, but anæsthesia in the distribution of the external cutaneous nerve has persisted. The operation in the case described by Neisser and Pollack¹ seems to have been merely a division of Poupart's ligament, and thereby relief of pressure and disappearance of the annoying symptoms.

Pain from Visceral Lesions. James Mackenzie² has made some observations regarding the situation of pain when visceral lesions are present, and has found that in gastric affections the pain is usually referred to the epigastrium; that in obstruction of the small intestine the pain never descends below the umbilical area, although it does when the obstruction of the large intestine is at the splenic and sigmoid flexures. He believes that in lesions of the digestive tract the pain is felt in the middle line of the abdomen, and in regularly descending areas according as the region affected passes from the stomach to the great intestine—the epigastric area being the region for stomach pains, the umbilical area being the region for pains of the small intestine, and the hypogastric area being the region for pains due to the great intes-

¹ Mitteilungen aus den Grenzgebieten der Medizin und Chirurgie, 1902, vol. x. p. 453.

² Brain, 1902, vol. xxv., No. 99, p. 368.

tine. The higher the pain is in the epigastric area the nearer is the gastric ulcer to the cardiac end of the stomach. Mackenzie has also observed that hyperæsthesia in visceral disease is in the peripheral distribution of those spinal nerves whose centres in the spinal cord are connected with the sympathetic nerves supplying the affected organ. The pain which is caused by pressure over the abdomen in visceral disease and in peritonitis is entirely due to muscular and cutaneous hyperæsthesia. The pain of pleurisy is caused by the contraction of the hyperæsthetic intercostal muscles, and not to the rubbing together of the surface of the inflamed pleura, because the pleura is an insensitive structure and the same pain may arise from other cause, as in gallstone colic.

The board-like hardness of the abdominal muscles in certain diseases (peritonitis) is the result of violent stimulation passing from the affected organ of the abdominal cavity to the spinal cord. There the irritation spreads, affecting not only the centres of the sensory nerves, but also those of the muscular nerves. Mackenzie in one case opened the abdomen of a man without an anæsthetic, and was able to break down peritoneal adhesions, to resect a piece of bowel and underlying mesentery, to stitch the bowel and mesentery, and to pinch the bowel, the liver, and the peritoneum without causing any sensation; but when peristalsis occurred in the upper end of the bowel severe pain was felt in the region of the umbilicus at least twelve inches away from this piece of bowel. Mackenzie's stimulation was not sufficient to produce pain. The tunica vaginalis of the testicle he believes to be the only serous membrane that receives a cerebrospinal nerve, and, therefore, it is the only sensitive serous membrane; its nerve comes from the upper lumbar nerves, while the tissues of the scrotum are supplied from the sacral nerves. In renal calculus the scrotum is not hyperæsthetic, but the tunica vaginalis is. The subject of the location of visceral pain is of such practical importance that I have devoted considerable space to a consideration of Mackenzie's valuable paper, although he is not the first to write on this subject.

FUNCTIONAL DISEASES.

Hysteria. Under the name of *akathisia* Haskowec has described an affection which consists of an impossibility to remain seated. An excellent case of this character is reported by F. Raymond and P. Janet.¹ Their patient, a man aged forty-two years, was able to sit down, but in a few minutes began to manifest great discomfort. He

¹ Nouvelle Iconographie de la Salpêtrière, 1902, vol. xv.

twisted his body, contorted his muscles, raised himself by his hands from the seat of the chair, perspired freely, had palpitation of the heart, and his expression was one of terror and agony. He was obliged to walk to and fro in the room incessantly, but if he had a definite point to reach in walking he manifested symptoms like those when he was seated. Haskowec has compared this symptom-complex with the *astasia-abasia* of hysteria, which consists of the inability to stand or walk, although the person may have good movement of the muscles while in bed. The symptom-complex differs essentially from *astasia-abasia*, as Raymond and Janet show, because the man is able to sit down and even to remain seated a few minutes. He, therefore, has not lost the memory of these movements. The man's trade has compelled him to work seated before a table, and as a result he has this *abulia* as regards his work. The condition is similar to the writers' *cramp*, to certain forms of *tic*, and to the various forms of *obsession*.

A peculiar hysterical phenomenon is described by Richard Greeff¹ as "*röhrenförmige Gesichtsfeld*," which might be translated as *tubular visual field*. Concentric contraction of the visual fields without detectable organic lesions of the eye-grounds is always suggestive of hysteria, but Greeff says that the tubular contraction is almost the rule in hysterical patients. This contraction does not vary, whether the visual field is taken at a distance of one metre or five metres away from the patient, whereas in organic contraction the size of the field varies with the distance at which it is taken. I have observed this tubular contraction in several cases of hysteria.

HYPERÆSTHESIA OF THE NAILS ASSOCIATED WITH HYSTERIA OR NEURASTHENIA. Extreme sensitiveness of the nails is certainly not very common, and yet H. Oppenheim² is able to report three cases of this peculiar affection. One patient, as an example, was a man aged thirty-six years. He came of nervous stock, and had been nervous since his youth, and more recently had complained of a feeling of anxiety and of insomnia. His nails had been very sensitive since childhood, so that cutting or cleaning them caused him great pain; even touching them was painful. When a child he dreaded the cutting of his nails. The nails of the hands were more sensitive than those of the feet. In two of the cases this peculiar condition had existed since birth or early childhood. Neurasthenia was prominent in these cases. The third patient was hysterical, and in her the sensitiveness was acquired.

Hyperæsthesia of the retina, of the acoustic nerves, of the skin, etc., in neurasthenic and hysterical persons is well known, but Oppenheim

¹ *Berliner klin. Wochenschrift*, May 26, 1902, p. 496.

² *Monatsschrift f. Psychiatrie und Neurologie*, April, 1903, p. 265.

has been unable to find any cases in the literature exactly like those reported by him, although a few cases have some resemblance to his. The fear of having the nails cut may become so great that it may amount to an obsession. It is probable that this sensitiveness occurs only in persons who have a neurotic disposition—hysteria, neurasthenia, or some functional nervous disorder. It is not improbable that the German author Hebbel had this peculiar affection, as he speaks of a neighbor making the cutting of his nails a regular occupation, which to him was most objectionable, on account of the prickling sensation in the fingers caused by it.

Obsessions. S. Weir Mitchell¹ is always interesting and instructive when he draws from his rich experience, and his recent paper is no exception to the rule. He has something to say regarding phenomena that he calls "reversals." The opposite of the thing willed was done or else what it was meant to do was done in a way which reversed the usual manner of doing it. One patient would go down the stairs and go down backward when he meant to go up; occasionally he would walk backward in the street. Another would begin to read a book by looking at the end first, and she could not read the book in the usual manner until she had read a few pages at the end. Still another would put her drawers over her head or the undershirt over the feet; would put the shoes on the hands or the gloves on the feet. One patient would attempt to get into the bath head down in place of stepping into it. Possibly even more interesting was a case in which words were used in a meaning reverse of what was intended; thus, the man said, "I do not want whiskey and water," when he meant that he did. Another patient said backward what he wished to say, so that instead of using the words "my cat" he said "tac-im."

Dr. Mitchell refers to the fact that we make involuntary movements with the muscles of speech in thinking, and that the insane do this to a very noticeable degree.

A rare form of mental difficulty consists in a suddenly acquired incapacity to do some one particular thing. One of his patients occasionally became unable to write a letter, and another member of her family once found himself unable to pack his valise.

The obsessions of childhood, or, as Dr. Mitchell prefers to call them, despotic habits, are also mentioned. In one instance a bunch of cotton or a feather laid on the lintel of an open door kept a child from leaving the room, because he had a dread of such objects. Another boy would never go out-of-doors without an umbrella.

Despotic habits do not necessarily indicate a weak mind. Dr.

¹ Journal of Nervous and Mental Disease, April, 1903, p. 193.

Mitchell refers to the fact that when he was a boy the classes stood in line to recite, and the line would soon commence to sway from side to side. When this movement was forbidden on account of the whim of the schoolmaster, it was found that obedience caused a certain amount of mental failure.

Epilepsy. Max Biro¹ draws conclusions from 306 cases of epilepsy that he has studied. He, as do most writers on the subject, finds epilepsy more common in males (55 per cent.), and it begins more commonly within the first twenty years of life. Girls (63 per cent.) are more frequently attacked than boys, but after the period of puberty the disease is found more frequently in males. The epilepsy of old age does not differ from that of youth, except that arteriosclerosis aids a predisposition to epilepsy. The article is a long one, and the symptomatology, prognosis, and treatment are discussed, but there is not very much that is unknown.

FECAL VOMITING IN EPILEPSY. Fecal vomiting during epileptic convulsions has been observed by H. Götze.² A woman, aged fifty-one years, who had had epilepsy since puberty, in 1897, vomited fecal matter while in status epilepticus. The vomiting was repeated in later attacks. This seems to be the only case of the kind in the literature. Götze supposes that the intestinal musculature was thrown into spasm, and that occlusion of the intestinal canal was produced by the spasm.

Ossipow has shown experimentally that the intestines share in the epileptic contractions.

HEART DISEASE AND EPILEPSY. Much has been written concerning the relation of heart disease to epilepsy, and T. L. Chadbourne,³ after studying the literature on the subject and numerous cases in the Ohio Hospital for Epileptics, says that he was unable in any of his cases to show that there was any direct connection between the vascular lesions and epilepsy. It seems to him more than doubtful if the occurrence of heart lesions in epilepsy is anything more than a coincidence.

REFLEX EPILEPSY. Reflex epilepsy is not common, and yet some cases seem to show that it does exist, as, for example, a case reported by F. Krause.⁴ The patient had undergone several operations on the trigeminus for the relief of painful tic, and epileptiform attacks had developed after the second operation. Pressure on the scar of the face resulting from this operation caused a new attack, or increased the intensity of the attack if the pressure were applied while an attack was in progress. As all three divisions of the trigeminus were implicated,

¹ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxiii., Nos. 1 and 2, p. 39.

² Neurologisches Centralblatt, June 16, 1902, p. 536.

³ American Journal of the Medical Sciences, March, 1903, p. 461.

⁴ Berliner klin. Wochenschrift, July 14, 1902, p. 669.

and excision of the scar causing epileptiform attacks probably would not remove the seat of irritation, inasmuch as another scar would form, it seemed wise to excise the Gasserian ganglion. This accordingly was done, and the painful tic and epileptiform attacks ceased, although the time that had elapsed since the operation—five weeks, when the report was made—was not sufficient to determine whether the cure was permanent or not.

MYOCLONUS-EPILEPSY. In employing the term myoclonus-epilepsy Clark and Prout¹ speak of what they call an "association disease." They believe that the pathological seat of myoclonus is probably in the cerebral cortex, where most other chronic convulsive disorders are located. It seems probable, I think, that at least certain forms of spasmodic torticollis are to be attributed to cortical alteration, but it is doubtful whether we have as yet sufficient information to justify a very positive opinion regarding this alteration.

Clark and Prout say that many able neurologists class essential myoclonus as well as myoclonus-epilepsy as a form of epilepsy, as an incomplete convulsion in which the motor element only is present. They do not accept this opinion unconditionally, but they seem to favor it. Essential myoclonus is a rare affection, but according to Clark and Prout there are only fifty-seven cases of myoclonus-epilepsy, including four of their own, reported in the literature; and excepting their own cases no instances of this association disease are to be found in the English language, although many are now on record in the German, Italian, and French literature. Family degeneracy is important in the etiology of myoclonus, according to Clark and Prout, as much so as in epilepsy, and they regard as doubtful, even when express statements to the contrary occur, that myoclonus-epilepsy ever appears in an individual coming from a healthy stock. There are several instances on record in which myoclonus-epileptic parents produced myoclonus-epileptic children, so that the disease may be directly transmissible. Men are more frequently affected than women, the proportion being in the ratio of 5 to 3 so far as regards the fifty-seven recorded cases. All the cases have developed in early life and under the age of twenty, except one. In three-fourths of the cases the symptoms became first manifest between the ages of nine and fifteen years. In one-half of the cases epilepsy has appeared first in periods ranging from a few weeks to several years. In one-third of the cases myoclonus has appeared first, and in the remainder the two diseases have had a simultaneous onset. Usually the epilepsy persists throughout life, but in a few instances it has existed only at the beginning of the disease. The

¹ American Journal of Insanity, 1902, vol. lix., No. 2.

epileptic seizures are not preceded by an aura, but premonitory signs of increased myoclonic contractions occur in the majority of cases. Frequently the epileptic attacks are abortive. No periodicity marks the occurrence of seizures, and no myoclonus-epileptic is recorded as dying of the status epilepticus, although a sort of status myoclonus frequently hastens death and may produce it. In many cases consciousness is only disordered or partially lost. The myoclonus of this association disease is often atypical. Under sedative treatment myoclonus-epileptics may enjoy entire remissions from both forms of the disease for months or years. In the worst forms weakness and atrophy may develop. The mental state varies from feeble-mindedness to complete imbecility. Prognosis, so far as recovery is concerned, is bad. Stigmata of hysteria in any case should make the diagnosis doubtful. The treatment of this mixed type of disease is that of epilepsy, and the bromides are employed in much the same way. The pathology is as unknown as is that of epilepsy.

It is interesting to observe that Clark and Prout do not believe in the close association of chorea and epilepsy, and they say that in their clinical experience of several thousand epileptics they have never seen a case of choreic epilepsy, and they think all so-called cases are examples of myoclonus-epilepsy.

TREATMENT OF EPILEPSY. Hubert Schnitzer¹ has employed the diet containing little sodium chloride on sixteen patients who seem to have been excellent subjects for the test. He gave each patient 1½ litres of milk, 50 grammes of butter, 3 eggs, 400 grammes of bread and vegetables. Bromide of sodium instead of chloride of sodium was placed in the dough and baked in the bread, so that 3 grammes were contained in the 400 grammes of bread. The results were good. Two patients had no attack during the treatment; two others had each one attack in the beginning of the treatment; another had two slight attacks in the beginning of the treatment; another had four attacks during the forty-two days the treatment was employed, and these attacks were shorter and feebler; others were benefited by the treatment to a less extent, but two patients did not seem to improve. The results are encouraging, not as much so perhaps as those obtained by some others, but they help to make the treatment worthy of trial. Schnitzer suggests that if this diet is objectionable and cannot be employed a long time it should be employed in periods of six to eight weeks from time to time.

Rudolph Bálint² has previously reported the good results he has obtained by feeding epileptic patients with food poor in chloride of

¹ Neurologisches Centralblatt, September 1, 1902, p. 803.

² Ibid., April 16, 1903, p. 347.

sodium, and now he reports the results of his further investigations. The impairment of nutrition observed by some who have tried this form of treatment he thinks may be explained by the diminished amount of food taken, inasmuch as the diet is distasteful to many. The human organism contains a certain amount of chloride of sodium, and sufficient to keep up this amount is taken with the unsalted food. Children, carnivora, and certain races are nourished with unsalted food. Therefore, it is probable that epileptic patients do not lose weight simply because the food contains less salt.

The diet which Bálint employed consisted of milk, butter, eggs, fruit, and bread made with bromide of sodium. Although his patients did well while treated in this manner, they became tired of this food after a time, and it was necessary to give them a change. This he accomplished by giving them substances containing a little more salt at periods when there were few attacks. He added to the former diet vegetables and flesh, and also administered a bromide preparation, but so soon as symptoms of bromide poisoning appeared the amount of the drug was lessened, and the amount of food richer in chloride of sodium was increased. This mode of treatment Bálint believes may be carried out for a long time with great benefit to the patient. It is troublesome, especially in treating private cases at their homes, but when it is faithfully employed it is worthy of the attempt.

Adiposis Dolorosa. There seem to be only two cases of adiposis dolorosa with involvement of the joints—one reported by Renon and Heitz and one by Dercum.¹ In the former case there were marked pain, creaking and limitation of movement in numerous joints. A skiagraph of the left knee failed to reveal any alteration of the articular surface. The knee-cap was a little thickened, and the synovial membrane caused a slightly opaque shadow which was regarded as due to fatty thickening of this membrane. In Dercum's case, also, the synovial membranes were believed to be thickened by fatty infiltration.

The fifth case of adiposis dolorosa with necropsy is reported by Dercum and McCarthy,² the case having been reported as a clinical one previously by Dercum. In this case the changes in the thyroid gland were slight, but the pituitary body was enlarged and was the seat of tumor formation. Interstitial neuritis was also present. Hæmolymp glands were found in the subcutaneous fat, and they were regarded as indicative of profound disturbance of nutrition, possibly on account of disease of the thyroid gland and pituitary body. This was believed to be the first case in which the hæmolymp glands have occurred in man as new-formed structures.

¹ Philadelphia Medical Journal, December 20, 1902, p. 1007.

² American Journal of the Medical Sciences, December, 1902, p. 994.

Myasthenia Gravis. Theodore Diller¹ has observed a case that he believed to be one of myasthenia gravis complicated by angioneurotic oedema. The diagnosis was made on account of the long course of the disease; the weakness of the extremities, face, and soft palate; the occurrence of diplopia, the absence of sensory and mental symptoms and of atrophy, and on account of the peculiar speech defect and the fact that it varied greatly in degree, being always much more pronounced after conversation. Diller thinks that a relation between myasthenia gravis and angioneurotic oedema has never before been observed, and that both conditions were the effects of the same cause.

In a long article Goldflam² reports eight cases of myasthenia gravis, one with necropsy, and discusses the symptomatology of this rare and curious disease. He thinks that Strümpell is right when he says that the abnormal exhaustion of the muscles is the fundamental phenomenon of the disease, whereas Oppenheim regards it as characteristic. Goldflam speaks of this symptom as *apokamnose*. This exhaustion may entirely disappear during the remissions that are common in the disease. It seems remarkable that in many cases of myasthenia gravis tumors have been found in some part of the body. Goldflam is able to give very little that is new either in regard to the pathology or treatment of myasthenia gravis. His findings in the one case with necropsy I have referred to in my digest of last year in PROGRESSIVE MEDICINE.

Richard Link³ has found collections of cells in the muscles in a case of myasthenia gravis pseudoparalytica, and his is the third case in which these findings have been obtained. The cells were the same as those described by Weigert in his case, but in Link's case they were also in the external ocular muscles.

Migraine. Migraine is often complicated by unusual symptoms, but one of the most remarkable cases is reported by L. Hoeflmayr.⁴ *Hemiscotoma* lasted twenty-six days after the migraine attack had ceased, and the patient had become conscious, and had no other cerebral symptoms. The hemiscotoma was not believed to be a sign of hysteria or simulation, and the patient, a woman, had no stigmata of hysteria. This unusual symptom gradually disappeared. Even more remarkable than the hemiscotoma was loss of consciousness during ten days following the attack of migraine. This was supposed to be caused by the simultaneous occurrence of a migraine attack with neurasthenic exhaustion.

¹ Journal of Nervous and Mental Disease, April, 1903, p. 210.

² Neurologisches Centralblatt, 1902.

³ Deutsche Zeitschrift f. Nervenheilkunde, vol. xxiii., Nos. 1 and 2, p. 114.

⁴ Neurologisches Centralblatt, February 1, 1903, p. 102.

Family Periodic Paralysis. The three cases of family periodic paralysis—one already reported—described by Mitchell, Flexner, and Edsall¹ are interesting chiefly on account of the experimental work and chemical examination made in connection with them. Experiments with the blood were unsatisfactory, but so far as conclusions could be drawn from one case the authors believe that the attacks were due to metabolic disturbance situated chiefly or primarily, perhaps entirely, in the muscles. It seemed probable that there was a disturbance in the metabolism of the muscles preceding the attack. The relation of the kreatinin excretion to the attacks was evident, and it seemed almost unquestionable that the kreatinin was an index at least of alteration in metabolism which led up to a seizure. There is no reason for believing that a retention of kreatinin would produce the symptoms, and it is probable that the alteration in kreatinin excretion was indicative of the existence of disturbance of metabolism.

Citrate of potash as a prophylactic in doses of 45 to 60 grains a day seemed to have some small but uncertain effect in two cases, but in a third it did not reduce the frequency of the attacks. Administered at the beginning of a seizure in repeated large doses, it certainly shortened and mitigated the paralytic period in all three patients. A similar though not so marked influence upon the seizures was shown in two cases by the administration of bromide of potash. Although citrate of potash is absorbed as the carbonate, the latter salt was less useful when employed in the place of the citrate.

Chorea. Chorea mollis or paralytica is rare. Slight weakness is common in Sydenham's chorea, but distinct paralysis is not often observed. The paralysis may precede or follow the choreic movements. Two cases, one with necropsy, death resulting from bronchopneumonia, have recently been reported by W. Rindfleisch.² Pathological changes were very slight in the nervous system, but were pronounced in the muscles, the muscle tissue being degenerated and the sarcolemma nuclei proliferated.

SPASMS OF EYELIDS. Clonic spasm of the levator palpebræ is not of common occurrence, and the case observed by W. C. Posey³ is important. The peculiar movements occurred in a boy, aged eight years, and developed after the back of his head had been run over by a wagon. The boy complained somewhat of headache and of a sensation of sand in his eyes. The contractions of the levator muscles were clonic and rhythmical, the fissures widening about fifteen to twenty times in the minute. They were entirely under the control of the will,

¹ Brain, 1902, vol. xxv., No. 97, p. 109.

² Deutsche Zeitschrift f. Nervenheilkunde, vol. xxiii., Nos. 1 and 2, p. 143.

³ Journal of Nervous and Mental Disease, July, 1902, p. 419.

the patient being able to initiate them or to cause them to cease when commanded to do so. The excursions of both eyes were normal; there was no nystagmus; vision and accommodation were normal; both eyes were apparently hypermetropic. The frontalis muscle did not appear to be concerned in the contractions, and the movements had no connection with the act of winking. The pathogenesis of the affection was assumed by Posey to be choreiform, the spasm of the levator replacing the spasm of the orbicularis, which is so common a manifestation of habit chorea. This seems to be the first case in which spasm of the levator has occurred in connection with chorea. Although under ordinary conditions the action of the levator in raising the lid is inseparable from a contraction of the frontalis, Posey says it is possible by practice to innervate the levator alone and to widen the fissure without bringing the frontalis into play, and he has seen this isolated action of the levator, though but to a slight degree, in several patients with chronic conjunctival irritation, where the movements of the lid seemed to bring momentary relief to the local sensations. He has repeatedly noticed the fissures widen independently of any action of the frontalis when patients fixed the finger in the cover test at the near point, the widening in the latter instance being attributable to an associated stimulation of both internal rectus and levator muscles.

In the case of levator spasm described by Posey the movements in the lids disappeared so soon as atropine was instilled for refraction purposes, and did not return after proper glasses were worn.

Torticollis. Obstinate as spasmodic torticollis is as regards medicinal treatment, some cases do yield to it, and in these it is unnecessary to use the surgeon's knife. C. S. Potts¹ has followed Leszynsky's suggestion of giving daily injections of atropine, beginning with $\frac{1}{120}$ grain and gradually increasing until the physiological limit is reached, which is sometimes as much as $\frac{1}{4}$ grain. In the case that Potts reports the spasms had persisted about one year and the man was unable to work on account of them. He was first given $\frac{1}{100}$ grain of hydrobromate of hyoscyne and 15 grains of bromide of potassium three times a day, and the galvanic current, the anode stable over the affected muscle, was applied daily. After three weeks of this treatment, without improvement, the hyoscyne and bromide were discontinued, and $\frac{1}{200}$ grain of atropine was injected into the affected sternocleidomastoid muscle. This injection was made daily, and in the back of the neck alternately, the dose being gradually increased until in three weeks the patient was getting $\frac{1}{45}$ grain, and was much improved. The electricity was also continued during this time. After this the atropine was stopped, and

¹ Univ. of Penna. Medical Bulletin, April, 1903, p. 60.

the man was comparatively well for four months. He then had some return of the movement, and the treatment was then recommenced and was continued, although not daily, for three months. He was then able to return to work. One forty-fifth of a grain was the largest dose he could take.

The success in some of these cases from the use of hypodermic injections of atropine warrants us in giving the method a trial, but medicinal treatment is useless in certain cases. At the University Hospital we have recently been obliged to resort to operative measures in a case in which atropine failed.

Myospasms. The various forms of muscular spasm are difficult to classify, and it is uncertain how sharply the dividing lines should be drawn. We have the myoclonus multiplex of Friedreich, the electric chorea of Bergeron, the fibrillary chorea of Morvan, the myokymia of Schultze, the electric chorea of Dubini, the convulsive tic, etc.

G. L. Walton¹ has recently attempted to bring order out of this confusion. Dubini's disease, he says, is infectious, endemic, and generally fatal. Convulsive tic is generally unilateral and facial, and has little in common with the persistent fibrillary twitching of myokymia. The fibrillary chorea of Morvan is an acute disease of childhood accompanied by constitutional symptoms, in one case even by delirium, and in one case was followed by death. Walton acknowledges that it may appear radical to separate myokymia from the myoclonus of Friedreich, as Kny gave to the former the name of myoclonus fibrillaris multiplex, or to separate it from the electric chorea of Bergeron, and yet there is little in the general quivering of muscular fibres to suggest clonic spasm or the variety of contraction characteristic of Friedreich's myoclonus, although it is true that in the latter occasional fibrillary twitching occurs. The characteristic feature of myoclonus multiplex consists in more or less symmetrical clonic spasm affecting the whole or greater part of the muscles involved, the muscles of the trunk and the large muscles of the extremities being most affected. According to Gowers a type to be regarded as myoclonus multiplex must have sudden shock-like character of the muscular contractions, bilateral symmetry, and comparative freedom of the extremities. Walton, therefore, says that unless further analogy is established between myokymia and myoclonus multiplex it is reasonable to regard myokymia as a separate disorder. The persistent muscular quivering (myokymia) most frequently observed in the adult male, though a troublesome disorder, is, according to Walton, of no grave import, as far as can be judged from recorded cases. It may run a comparatively short course and terminate in

¹ Journal of Nervous and Mental Disease, July, 1902, p. 403.

recovery, or it may persist for years without appreciable effect upon the nutrition or the usefulness of the affected muscles. It does not involve the entire muscle at any given time, but affects group after group of fibres, most commonly in the muscles of the calf and thigh, especially the glutei, less often in the shoulder muscles, and still less often in the small muscles of the hand, and those of the trunk and face. The electrical irritability is sometimes increased to both currents. Tetanus may be produced by a moderate current, and persist after the removal of the electrode. The symptoms have followed lead poisoning or poliomyelitis, either directly or after an interval, and in the latter case its extension has usually been in muscles not involved in the original paralysis. It may appear during attacks of sciatica and persist long after the pain has passed away. Its temporary appearance is not uncommon in health, and Walton shows by one of his own cases that it may persist for a number of years without other sign of central or peripheral disease. Although it resembles closely the fibrillary twitching of progressive spinal muscular atrophy, it has a very different prognosis.

In one of Walton's cases, a man, aged about twenty-four years, began to have the fibrillary tremors in the unaffected muscles of the left lower limb, which had been partially paralyzed in infancy by anterior poliomyelitis. The twitching gradually extended to other muscles of the body. The phenomenon appeared while the limbs were in a state of relaxation and was not increased by movement, and was practically constant. Occasionally a movement of the finger or foot was produced.

Walton cannot explain these peculiar movements to us, but he states that they have been assumed to be of an irritative nature, whether of direct or of reflex stimulation. He asks whether it is not equally plausible that we have to do with something in the nature of a more or less rhythmical lapse from tonicity, or that the quivering represents something analogous to increased mechanical irritability, or to certain stages of the degenerative reaction to galvanism, namely, a phenomenon resulting from a quality inherent in muscle fibre and released to a greater or less degree when the muscle is freed from the controlling influence of the cerebrospinal axis. It certainly is true, as Walton says, that we have in myokymia a symptom analogous to, though of less grave import than, the fibrillary twitching of progressive spinal muscular atrophy. The conclusions Walton reaches regarding the myospasms are:

"1. The term *myoclonia*, as a collective designation for the unrelated disorders, should be discontinued.

"2. The term *myokymia* should be limited to cases showing, without hereditary or congenital history, widespread muscular quivering, with-

out atrophy or other indication of progressive degeneration of the nervous system, without constitutional symptoms, and without sign of present infectious or other acute disease. Cases should not be excluded, however, on account of preceding or introductory symptoms pointing to disease of the lower neurones, if such disease has either disappeared or come to a standstill.

"3. The term *myoclonus fibrillaris multiplex* should not be applied to such cases, since it suggests a relationship between myokymia and the paramyoclonus multiplex of Friedreich, with which it has nothing in common.

"4. *Myoclonus multiplex* (the prefix *para* seems superfluous) should be used to designate bilateral clonic spasms involving whole muscles or groups of muscles, generally those attached partly or entirely to the trunk.

"5. The term *myotonia acquisita* should be limited to non-hereditary and non-congenital cases in which otherwise healthy individuals present the typical motor disorder or the typical reactions of Thomsen's disease. This term should not include the rigidity accompanying marked intestinal disorder or pronounced psychopathic states, even though the rigidity in the latter conditions may be increased by voluntary movement.

"6. The tendency to spasm on attempted voluntary movement, unless accompanied by the typical motor disorder, or the typical reactions of Thomsen's disease, should be classed as *intention spasm*.

"7. The term *myospasm*, clonic or tonic, may be used instead of myoclonia and myotonia when it is desirable to include under one head the various forms of involuntary muscular contraction without known organic basis."

Facial Spasm. A peculiar form of facial tremor is described by Bernhardt.¹ Constant fibrillary twitchings were seen in the muscles of the left side of the face only, especially in the forehead, the orbicularis palpebrarum, and the muscles of the lips and chin. No sensory disturbances were present, and electrical reactions were normal. The facial muscles were not in the least paretic and never had been, so that the tremors had no relation to those not infrequently seen in cases of long-standing facial palsy. The tremors described by Bernhardt caused no displacement of the muscles of the face. They were not regarded as indicative of bulbar disease on account of the age of the patient—twenty-seven years—the unilaterality of the process, the absence of implication of the tongue, of the muscles of speech and of deglutition, and the excellent health of the patient. Bernhardt compares them

¹ Neurologisches Centralblatt, August 1, 1902, p. 689.

with the tremors first described by Kny and later named "myokymia" by F. Schultze, which are seen especially in the calf muscles, more rarely in the muscles of the trunk, and still more rarely in those of the upper limbs. Williamson alone has seen implication of the face, and yet in this case described by Bernhardt the face only was affected, and the patient was a female, most of the cases having been in males. No signs of hysteria were discovered. Small doses of bromide of potassium and a feeble galvanic current caused all symptoms to disappear after they had existed two and a half to three months.

DISEASES OF THE MUSCLES.

Progressive Muscular Dystrophy. "Facies of the Sphinx" is a term used by Ballet and Delherm¹ to describe a peculiar condition of the neck observed by them in two cases of muscular dystrophy, consisting of enlargement transversely of the base of the neck and flattening in the anteroposterior diameter. This peculiar deformity was associated with much atrophy of muscles. The name is very descriptive, and it is a pity that the brief note is not accompanied by illustrations, so that we might judge of the resemblance to the neck of the Sphinx. H. Meige, however, in the discussion remarked that this deformity is not uncommon in muscular dystrophy, and he referred to some illustrations already published. It is true that these do suggest the outlines of the neck of the Sphinx, especially when the upper limbs are extended horizontally and laterally. P. Marie regards the deformity as so characteristic that the diagnosis of muscular dystrophy may be made by this sign.

A certain number of cases in the literature seem to indicate that progressive muscular dystrophy may be caused by trauma, but F. Kramer's² case is so obscure that the etiological relation of the trauma is far from proven. As the case was merely a clinical one, it is not even proven that it was one of muscular dystrophy, but Kramer regarded it as closely allied to this disease in spite of the rapid course of the weakness and the absence of atrophy. His patient was a soldier who received a blow from a horse's hoof on the right arm. The blow was not severe, and the bone and skin were not injured. Severe pain lasted only a few days, but within a few days after the accident the man began to complain of weakness in both upper limbs, and a little later in both lower limbs. The deltoid and gluteal muscles were especially weak. The electric irritability was diminished, but there was

¹ *Revue Neurologique*, June 15, 1902, No. 11.

² *Monatsschrift f. Psychiatrie und Neurologie*, September, 1902, p. 199.

no reaction of degeneration, no muscular atrophy, and no disturbance of objective sensation. The diagnosis of muscular dystrophy is in some cases difficult to make, and it is sometimes impossible to separate this disease from the spinal form of muscular atrophy. It is certainly remarkable that the general muscular paralysis of the limbs developed in Kramer's case soon after a trauma, but this may have been only a coincidence, and without a necropsy the diagnosis of the form of atrophy must be regarded as doubtful.

Gowers¹ has reported a case of muscular dystrophy unlike any other he has ever seen. The patient was a boy aged eighteen years. The symptoms first attracted notice when he was ten or twelve years old; then he often caught his toes against the ground in walking. Later his hands became weak, and the feebleness of hands and feet is now great. The movements of the knee and hip are performed with good power, and the knee-jerks are present. The thigh muscles are of normal size. The calves suggest a resemblance to the condition in pseudohypertrophic muscular paralysis. The grasp of the hands is extremely feeble. The muscles of the forearms and hands are small, but present no wasting comparable to that which is seen in progressive spinal atrophy. Above the forearm the muscles have fair power and present no wasting; only a trifling atrophy of the middle part of the trapezii can be observed. The face is implicated. The importance of this case lies in the involvement first of the distal parts of the limbs, as almost always these parts either escape entirely in progressive muscular dystrophy, or are not affected until late. This case shows what has often been impressed upon us, viz., that it may be extremely difficult to make a diagnosis between muscular dystrophy and progressive spinal muscular atrophy.

Ballet and Delherm² have observed a case of progressive muscular dystrophy of the pseudohypertrophic type with mental symptoms. They say that many cases have shown that the association of progressive myopathy with mental symptoms is frequent. Scleroderma was also present in their case, and to some extent was in relation with the muscular atrophy—*i. e.*, in the portions of the body in which the scleroderma was most pronounced the muscles were weakest. According to Henry Meige, scleroderma is not uncommon in muscular dystrophy, and it has been recognized for a long time in amyotrophy of spinal origin.

C. H. Bunting³ reports three cases of progressive muscular dystrophy occurring in the male members of a single family, and commencing at

¹ British Medical Journal, July 12, 1902.

² Revue Neurologique, April 30, 1903, p. 441.

³ Journal of Nervous and Mental Disease, June, 1903.

the same age in each. The cases are noteworthy in the apparent absence of etiological factors and especially of hereditary influence; in the susceptibility of the boys and immunity of the girls of the family to the disease, and in the remarkable uniformity of the age of onset and of the course of the disease. The three boys showed the first distinct signs of muscular atrophy when each was five years old.

It is well known that the male members of a family may be more liable than the female members to progressive muscular dystrophy, and yet such cases as Bunting reports are very uncommon.

Local Panatropy. A peculiar condition which Gowers¹ has called local panatropy consists of wasting of all the subcutaneous tissues down to the bones, with slight changes also in the skin, which is thinner and slightly discolored. This atrophy is found in certain areas of the trunk, limbs, or face, which vary in size. The aspect of the areas is described as that of a subcutaneous excavation. The areas are distributed irregularly, without apparent relation to the muscles or to the nerve distribution. Where the process is considerable the muscular tissue shares the wasting, but seems not entirely to disappear, and the electric irritability of that which remains is normal. Gowers saw a case of this kind in 1885. His patient was a single woman then aged thirty-three years. Since that time many fresh atrophic areas have developed, but she is at present hardly more conscious of her malady than she was seventeen years ago. In a case of this disease observed by Campbell the bones of the right foot had atrophied, but no atrophy of the bones has occurred in Gowers' case. There seems to be some connection between local panatropy and facial hemiatrophy. Nothing is known concerning the cause of this peculiar affection, and clinical cases are rare. It is uncertain whether there is disease of the spinal cord or not.

Trophoneurosis. A peculiar form of trophoneurosis—whatever that may be—is described by Raymond and Sicard.² They report two cases of unilateral atrophy of the body occurring in brother and sister. In one case the process was ascending, and in the other descending. The atrophy was of slow course and implicated the bony tissue as well as the soft parts. Sensation, the reflexes, and the electrical reactions were not altered. This form of atrophy they call "total and family hemiatrophic trophoneurosis." The occurrence of this trophoneurosis in a brother and sister is especially interesting, and is regarded by Raymond and Sicard as evidence of the nervous origin of the disease, but the name trophoneurosis does not explain the process and gives us little or no information.

¹ Review of Neurology and Psychiatry, January, 1903, p. 3.

² Revue Neurologique, July 15, 1902, p. 593.

OBSTETRICS.

By RICHARD C. NORRIS, M.D.

PREGNANCY.

Dietetic Treatment in Pregnancy. In R. Crouson's translation¹ from the German of Prochownick's article the connection between the state of health and strength of the mother and the character of the birth, the puerperium, and lactation is shown, and the influences of diet during pregnancy upon these and upon the development of the child are discussed. The writer says: The uterus on account of its innervation performs its functions under difficult circumstances, particularly in severe acute diseases in the paralytic, in consumptives, and in those with atrophy of the muscles. The only difference is in how that function is performed. Many though not all obstetricians recognize the so-called primary uterine inertia of the chlorotic and poorly developed woman. The same holds true as regards the so-called secondary feebleness of labor pains due to diminished action of the abdominal muscles met with in the anæmic, in convalescents, in women reduced by an organic disease, such as nephritis, and in women with extreme relaxation of the abdominal muscles. On the other hand, we have no certain knowledge regarding the pathological condition of the uterine muscular structure or of the elasticity of the connective tissue as a factor in the progress of labor in the first group of primary uterine inertia. As regards fat women, experience proves that they have thin, atrophic abdominal muscles, which is the cause of the frequent secondary weakness of labor pains during the second stage. At the same time there must be changes in the uterine muscular tissue of which as yet we know nothing, because atony of the uterus with post-partum hemorrhage is very frequent in fat women. The primary uterine inertia of elderly primipara, with labor lasting from three to five days, is most frequently observed among fat women. All these types of women—anæmic, chlorotic, those with atrophied abdominal muscles, and fat women—encounter some difficulty during the puerperium, all have to combat some form of impaired function of intestine or

¹ American Gynecology, October, 1902.

bladder, and they furnish the greatest number of those with subinvolution and its evil train. Of greater importance is the fact that the number of women who cannot nurse their young is ever increasing. Artificial feeding was almost unknown before the fifteenth century. During the last ten years the number of women who cannot nurse has increased to an alarming extent. These are the anæmic, obese, the chlorotic, and those exhausted by overwork. Women's sphere of labor mentally and physically is broadening rapidly. A great many women have not been able to adapt themselves to their calling, and in consequence suffer from some ailment which of itself does not cause invalidism, but proves a great drawback when they are called upon to perform their sexual duties. The inability to nurse has been proved hereditary, and in that fact lurks a great danger to the nation. It is the duty of the physician who cannot oppose justly the broadening of woman's fields of usefulness to recognize and treat any weakness of her constitution, especially during pregnancy. With treatment the physician not only can improve the chances of labor and insure a vigorous child, but he also can combat the threatened inability to nurse, eliminating thereby a widely acting degeneration. Since the inability of the mother to nurse has become such an important factor, it is therefore of the greatest importance to determine by scientific investigation a method of feeding pregnant women which, without injuring the child, will result in easier confinements among women of our civilization and enable them to nurse their young. Among the foods to be employed are those deficient in nitrogen, as well as vegetables and fruits. At the same time hygienic measures should not be neglected, such as exercise, a minimum of work, and airy sleeping apartments. Healthy women suffer less from constipation during pregnancy, provided they partake of but little meat, fluids, or bread, but a great deal of vegetables and fruits. The therapeutic measures discussed here were employed primarily for pregnant women reduced in general health. To improve their constitution and insure an easy confinement and normal puerperium a form of diet was prescribed adapted to their social status, guided by well-known scientific researches. The author's observations began in 1885, and as proof of the value of his method of treatment he refers only to women who on previous occasions had gone through difficult confinements. With these restrictions his cases number five of extreme obesity treated with a restricted diet, and seven women extremely reduced in their health treated with overfeeding. For fat women the manner of life was modified according to individual circumstances. They were forced to abstain altogether from soups, alcohol, and all forms of sweets, including preserved fruits. At the

same time a definite amount of exercise carried out several times during the day was ordered, including general massage, except of the abdomen, gymnastic and hydrotherapeutic measures. The quantity of carbohydrates and water inclusive of tea and coffee was strictly prescribed, 120-150 gm. (4-5 $\frac{1}{2}$) of bread and 500-600 c.cm. (16-20 $\frac{1}{2}$) of fluid being rarely exceeded. The choice of meats, fish, vegetables, and fats was left to the discretion and taste of the patients. Raw fruits were permitted to quench the thirst, but not in too great quantities at any one time.

Fruits agreed with preparations of iron, which were always given over an extended period. The most suitable preparation proved to be ferrum rubrum, with a little powdered rhubarb. Laxative drugs were allowed only when absolutely necessary. All orders were given with absolute minuteness in writing to the patients, and they, after ascertaining their weight, called every three or four weeks to receive instructions as to minor changes in diet and urinary analysis. Treatment began as early in pregnancy as possible. It is important to be strict with patients during the first six or eight weeks. After that with resulting improved health they have no desire for a change. A few delicacies after the restricted diet are permissible.

The conclusions drawn from these cases are as follows :

All were of average height, extremely fat, and had poorly developed, unused muscular systems. All had had one or two difficult confinements, characterized by primary uterine inertia, by long duration of labor, by deficient action of the abdominal muscles, and by atony of the uterus after labor. The treatment aiming to obtain diminution of fat, but not restriction of food, began in a slow, deliberate manner, culminating in two or three weeks in a strict diet and manner of living. The patients lost a few pounds at first, notwithstanding the advancing pregnancy ; later there was a slight increase in weight, though still disproportionate. They all felt less relaxed, were sprightlier, suffered less from thirst, walked and worked more easily. The course and character of the confinements were in each case more favorable than in earlier ones. The most impressive case was a patient who had grown very fat before her third confinement ; she was persuaded from undergoing treatment, and had as much difficulty as in her first. During her second and fourth she was under treatment and had easy births. The improved expulsive action of the abdominal muscles could be demonstrated. In all cases the spontaneous, normal expulsion of the placenta was typical. There was no atony of the uterus and less blood was lost than formerly. Regarding the ability to nurse, there was no improvement in those mothers who had been unable to nurse after previous confinements. Those

mothers who had nursed after previous confinements were so much improved by treatment that they were able to nurse longer, more easily, and more thoroughly.

The growth of the child as regards weight and length was disregarded in the dietetic treatment. The weight of the child was distinctly decreased with the loss of fat by the mothers. The marked increase in weight of a third child whose mother was not treated must be regarded as a typical experiment. The length and consistence of the bones were not influenced apparently, while, on the other hand, the scalp could be easily moved over the skull and the skin of the face and back appeared distinctly less puffed in many.

Women reduced in their general health by congenital chlorosis, any general disease, or by too many confinements in rapid succession stand in greater need of dietetic treatment during pregnancy than fat women. A distinctive method of feeding cannot be suggested to the practitioner because the reflex irritability of the stomach has to be considered. Treatment should begin early in pregnancy; complete bodily rest extending over several weeks is advisable. If possible remove the patient from her family and surroundings. Do not insist on only certain kinds of food, but adapt it to the appetite and digestive powers of the patient. Pregnant women can take large quantities of cream. The manner of preparing the food should be changed as often as possible, in order to have greater variety in the diet. Dry rubbing and light massage for the skin and muscles are begun during the preliminary period of rest; later they may be continued by a skilled masseuse or replaced by light exercise. Laxatives should only be given when absolutely necessary, and then a vegetable laxative may be administered. Small doses of iron should be given throughout pregnancy. Contrary to the rule for fat women, all kinds of fluids are given generously to the end of pregnancy. The quantity of alcohol is limited to the minimum required for stimulation of the appetite. This generous though not excessive feeding must be continued by small and frequent meals to the end of pregnancy. The first five or six weeks are most important; weight and strength are gained rapidly, and later the pregnancy assumes a normal course, as in healthy women, with a slower increase in weight. The good results of treatment were observed even when instituted in the last eight weeks of pregnancy. It is preferable, however, to begin earlier.

Following such treatment there was improvement in blood, bodily weight, and character of the confinement. The confinements were easier; there was increased uterine contraction in the third stage of labor; there was also an improvement in the ability to nurse. In the

treatment of the anæmic, although no attempts were made to influence the size, weight, or constitution of the child, the weights were increased beyond the average in most patients with each succeeding confinement, and the increase was thought to be due to overfeeding of the mothers.

The writer's endeavors to restore the nursing function were not encouraging, though he did succeed in establishing it in two cases out of six in which the women had previously borne children but had been unable to nurse. They were given liberally of carbohydrates in addition to the usual amount of albumin and fat; gentle massage of the breasts was used every second day, fifteen to twenty minutes, beginning six weeks before the birth of the child.

Discussing the effect of the mother's diet upon the growing fœtus the writer says: No matter how certain we may be of this interdependence, it admits of no direct proof, and in the state of our present knowledge we must rest content with probable evidence. Much and important evidence can be adduced in support of such a relation. It has been proved in the breeding of domestic animals and in human beings that healthy, vigorous, and large mothers usually give birth to offspring resembling them in condition. A few exceptions to this rule are not denied, but a satisfactory explanation has not been furnished. It is established, finally, that the offspring increase in size and weight with the number of births up to a certain age in normal health. It is similarly established that fully grown primipara have more vigorous children than primipara under twenty. The experience of animal breeders points to the connection between the feeding of the animal and the development of its offspring. Animal breeding has produced very valuable breeds of animals fitted for hard work or of a gentler strain as desired. It has also been able to influence and perpetuate certain valuable traits of a particular animal. Climate, character of soil and food are influencing factors. Breeders have determined the importance of certain methods of feeding in pregnancy with the object of obtaining special strains or averting disease. Bad results of one-sided breeding are also shown. His own investigations prove that in healthy women there is a distinct evidence of the influence of continued dietetic measures on the weight of the child. All these factors lead to the conclusion that in all probability there is a connection between the nourishment of the mother and the development of the child in healthy women. As physicians we are justified in utilizing this connection for therapeutic purposes. The following diet was prescribed in the writer's first cases: Breakfast—one small cup of coffee (150 c.c.—5 ℥), 25 gm. (6.2 ℥) zwieback or bread, and a little

butter; dinner—all kinds of meats, eggs, fish, with a little sauce, green vegetables prepared with fat, salad, and cheese; in the afternoon a small cup of coffee or tea with 15–20 gm. ($3\frac{1}{2}$ –5 $\bar{3}$) of bread or one egg was allowed; supper—the same as dinner, with 40–50 gm. (1 – $1\frac{1}{2}$ $\bar{3}$) of bread and a plentiful supply of butter. Water, soups, potatoes, pastries, sugars, and beer were forbidden. From 300–400 c.c. (9 – 12 $\bar{3}$) of red or Moselle wine a day was permitted. Slight variations have been made in the course of years, depending upon individual peculiarities and habits, but the main points have not been changed. Alcohol is excluded whenever possible. Water and milk in small quantities, and especially raw fruits, were given in its place. The entire quantity of fluids exclusive of that forming part of the food was limited to 500 c.c. (16 $\bar{3}$) per day. Change of diet, especially in the kinds of meat and vegetables given and in variety of preparation is of the greatest importance. Treatment should be begun ten to twelve weeks before confinement, and a strict diet attained in ten to twelve days. Outdoor exercise, housework, and sleep must be regulated. The patient should be weighed, and the urine analyzed from time to time. The writer insists that this treatment is advisable for women with true conjugates above 8 cm. For primipara with a conjugate of 8 cm. this treatment is not advised, as frequently first labors are very easy with apparently serious pelvic deformities. It is less desirable to combine this treatment with induced premature labor, because the aim to achieve full term, vigorous children is nullified by this procedure. It may be possible in exceptional cases with a conjugate of $7\frac{3}{4}$ – $7\frac{1}{2}$ cm. by the aid of this treatment to postpone the induction of premature labor nearer to the end of pregnancy. He considers as successful tests only such cases as have gone to full term under this treatment after having passed through at least one difficult confinement on account of a contracted pelvis. He has collected altogether, including his own, forty-eight cases with sixty-two births. All mothers stood the treatment well, and after a few preliminary difficulties bore it cheerfully. Thirst and a repugnance to an excessive meat diet were two of the difficulties. All the children were living at their birth, and continued to thrive. A large number of the infants are described as distinctly lean. The scalp is wrinkled, relaxed, and deficient in fat, and can be easily pushed over the skull. Reports agree that with ease the bones of the skull can be overlapped. All the children were of normal length and showed signs of maturity. The favorable course of the birth was typical in all cases. He then discusses the objections to this treatment, and concludes by saying that he can conscientiously recommend it to insure an easier confinement and more vigorous children.

The Effect of Revaccination during Pregnancy on the Child. Numerous cases recently quoted go to prove that in some instances the revaccination of pregnant women may render the infant temporarily insusceptible to vaccination after birth. The subject is discussed by Dr. J. W. Ballantyne in the first volume of his *Manual of Antenatal Pathology and Hygiene*, and is of both practical and theoretical interest. Dr. Ballantyne states that statistics prove that while the infants in such cases are not invariably refractory to subsequent vaccination, the immune percentage is larger than can be accounted for by idiosyncrasy or accidental causes; the proportion has been variously placed, he states, at from 32 to 80 per cent., and he concludes that it will be safe to assume that one foetus in three is protected by the vaccination of the mother in the second half of pregnancy. It is true, he says, that an infant has never been born carrying a vaccination pustule upon the skin as a result of the vaccination of the mother, but similarly an infant has never been born with the primary sore of syphilis upon its genital organs. The point of contact of mother and foetus is in the placenta and not on the fetal cutaneous surface, so that if a vaccination mark occurred in antenatal life it would have to be looked for in the placenta. There are two theories as to how protection is brought about. One that there is a direct transmission of an antitoxin elaborated in the maternal tissues to the foetus; the other, to which Dr. Ballantyne inclines, that the immunizing agent passes to the foetus and acts upon its tissues and fluids and that these elaborate the antitoxin. He also holds that the evidence proves that the protection afforded to the foetus by the vaccination of the mother during pregnancy does not last long, probably not more than six months, and this view appears to be confirmed by some of the new cases recently reported. The immunity is thus comparable rather to the protection produced by immunizing serum than to that conferred upon the infant after birth by arm vaccination. The practical conclusion drawn is that it is necessary to vaccinate all newborn infants, whether their mothers have been vaccinated or revaccinated during pregnancy or not; and, further, that in the presence of an epidemic of smallpox it will be wise to revaccinate a pregnant woman for the sake of her unborn infant even if not for her own. Another interesting point is noted in that there is evidence that the infant of a woman who has been revaccinated during pregnancy without success, owing presumably to earlier successful vaccination, may yet be born with a certain degree of immunity. Piéry¹ found that out of forty-four women who were insusceptible to revaccination thirty-one gave birth to infants refractory to vaccination.

¹ British Medical Journal, December 27, 1902.

The Placenta and the Decidua. Exhaustive investigations relating to the growth and development of the placenta are reported by Hitschmann and Lindenthal.¹ The impregnated ovum reaches the uterine cavity devoid of villi, and after it has abraded the epithelium and reached the mucosa it is enveloped by a particular kind of tissue of the trophoblast or ectoblast, which is in direct communication with the maternal tissue. This greater or less thickened cell development surrounds the first tender elevations of the mesoblast which forms the future chorionic connective tissue, while from the trophoblast cellular prolongations penetrate in all directions the adjacent very vascular maternal tissue and open up vessels. It is the trophoblast which possesses the power to open up vessels and to grow actively through the decidua; but since the life of the trophoblast is limited by the time it has arrived at that stage of development at which it has penetrated the maternal tissue the first elevations of the mesoblast have developed into more or less plainly discernible villi, which, however, are still covered with the trophoblastic material. Very soon absorption and atrophy of the inner portion of the trophoblast takes place, and finally it extends over the central portions of the villi; only syncytium and cells of Langhans cover the stroma of the villi. About this time the outer portions of the trophoblast atrophy and the rapidly growing villi force themselves into its place. It is, therefore, the trophoblast which establishes the first communication between the maternal tissues and the ovum, and which prepares the way for the growth of the villi into the maternal structure; and since the power of penetration of the villi depends upon the existence of the trophoblast, so with the atrophy, the further power of invading the maternal tissue is lost. The essential difference, functionally and morphologically, between the primary villi covered with trophoblast and secondary villi, is that the latter are covered with a double layer of epithelium and no longer possess the power of penetrating the maternal tissue or of opening up vessels, while their function is mainly that of producing a greater surface for absorption. With the atrophy of the trophoblast the definite foundation of the serotina is laid. The primary villi are of a certain unalterable number, situated at fixed intervals from each other. As the ovum enlarges the chorial surface increases in circumference, the primary villi become longer and broader. At the same time with the growth of the chorial surface the space between the villi becomes greater, but an actual increase in the number of villi does not occur. The uterus and the ovum enlarge with each month of pregnancy, and correspondingly

¹ Centralbl. für Gynäk., No. 44, 1902.

the serotina enlarges without, however, changing its relations to the decidua vera.¹

PASSAGE OF MICRO-ORGANISMS THROUGH THE PLACENTA. Opinion still seems to be divided upon the question as to whether the healthy placenta is permeable to micro-organisms. Some experimenters say that it is, while others that it is only so when diseased. Neilow² reports the results of his experiments done by injecting an emulsion of hay bacillus spores into pregnant rabbits. The rabbits were killed from two to six days after the injections and cultures taken from the blood and organs of the mother, from the foetus, and from the placenta. In the maternal organs the greatest number of colonies were found in the kidneys, liver, and spleen. In the spleen and liver of the foetus only one case out of fourteen showed a colony, and in this case there were spores in the maternal blood; so that a contamination was possible. In only a very small proportion of cases were there any positive results from the placenta. Out of thirty cases, in nineteen the medium remained sterile. In eleven there were growths. In one of these thirty colonies grew; the blood in this case grew countless colonies; in the remainder from one to three colonies grew. The writer concludes that non-pathogenic bacteria do not pass from mother to foetus; that there is no evidence that the placenta possesses special powers of phagocytosis. He believes, in spite of the large number of bloodvessels and endothelial cells of the placenta, this work is done in other tissues, and that the placenta's one function is to convey nutriment to the foetus.

Hydorrhœa Gravidarum. Hydorrhœa gravidarum is a result of one form of *deciduitis*. Bowen³ classifies deciduitis as acute or chronic, and is an endometritis modified by the changes in the uterine mucosa peculiar to pregnancy. The acute form may be due to trauma, sepsis, or certain infectious diseases. It occurs in three forms: 1. The infectious or exanthematous. 2. The hemorrhagic. 3. Purulent. The first form occurs with the development of the exanthematous diseases during pregnancy. The mucous membrane of the body of the uterus participates in the eruption and becomes intensely inflamed, causing abortion with high maternal mortality. The hemorrhagic variety is rare; it may accompany the acute infectious diseases and is characterized by profuse hemorrhage. The purulent form is more common and often rapidly fatal, following attempts at criminal abortion or other traumatism. The treatment of acute deciduitis consists in the manage-

¹ American Gynecology, January, 1903.

² Centralbl. für Bakt., June 3, 1902.

³ American Journal of Obstetrics and Diseases of Women, October, 1902.

ment of the complications as they arise, the control of the hemorrhage, and the application of aseptic principles. Chronic deciduitis is more common, and is a predisposing cause of a majority of early abortions. It may be due to a pre-existing endometritis becoming more inflamed in pregnancy, due to an increased vascularity of the tissues. Syphilis and other diseases have a causal relation. The varieties of chronic deciduitis are: (1) the diffuse hyperplastic, (2) the polypoid, (3) the cystic, and (4) the chronic catarrhal. The first variety consists in an inflammatory hypertrophy of the decidua vera, with hemorrhage into its structure, producing a firm sarcoous mass which is thrown off during the abortion and is known as the *fleshy mole of pregnancy*, or if the hyperplastic growth occurs later and the fœtus is further developed adherent placenta is likely to occur. The polypoid variety is characterized by the same hyperplastic inflammatory change, but occurring at different points over the decidua vera instead of over a broader surface, resulting in hemorrhage at these points into the decidua, and the formation of polypoid masses which cause abortions. The cystic variety results from an inflammatory closure of the ducts leading from the utricular glands, with consequent accumulations of fluid-forming retention cysts. The chronic catarrhal form occurs, as a rule, after the sixth month, and pursues a more gradual course than the other forms. It consists of an excessive secretion of the utricular glands, with some amount of hyperplastic inflammation of the decidua. It is more common in multiparæ. Adhesions form between the amniotic sac and decidua vera, preventing the escape of the glandular secretion, which accumulates in quantities large enough to break the adhesions, and then is expelled with a sudden gush constituting hydrorrhœa gravidarum or false waters, and closely resembling the escape of amniotic fluid in labor.

The etiology and pathology have not been accurately established. The exact source of the fluid is as uncertain as its pathology, and it is more than likely that all the constituent elements of the decidua contribute to the formation of the fluid. It is clear, thin, or pale yellow, containing albumin. Chemical tests fail to distinguish it from the liquor amnii. The discharge may occur while the patient is in any position, moving about or lying quietly. Usually it occurs before the end of pregnancy, and without any premonitory signs of labor. The flow occurs several or more times; the os is closed, and ballottement may be present. In rupture of the amniotic sac the occurrence is at the end of pregnancy, and usually immediately before delivery. Labor pains are present, and have been for some time. The discharge occurs but once, and the os is open. There is no ballottement. The liquor amnii contains only a trace of albumin and an abundance of urea. The

writer then describes a case which discharged fluid intermittently from six and one-half months until the end of the eighth month, when labor came on. Delivery was normal, but the placenta came away without any membranes. The edges of the sac could be seen through the external os by using a speculum. Efforts were made to remove it, but it was very friable and tore on slightest traction. It was left to nature. There was some slight elevation of temperature, but by using intra-uterine, hot, normal salt-solution irrigations slight particles and shreds of the membrane were washed out and the patient made a good recovery.

Polyhydramnios. E. P. Davis¹ reports several cases of polyhydramnios. He says polyhydramnios means more than two pints of amniotic fluid at term. Its pathology is not fully known; any fetal condition causing venous engorgement tends to produce it, and bacteriology throws no light upon it. The diagnosis is made, first, by diagnosing pregnancy, then by observing that in polyhydramnios we can usually obtain evidence of faint uterine contraction and can often insert the finger through the cervix and detect a presenting part. Polyhydramnios may complicate an ectopic gestation. In ovarian cyst the illness is longer, the swelling at first unilateral, the intermittent hardening of the tumor is absent, and the uterus can be found but little enlarged. In ascites the dulness changes when the patient's position is altered. When pregnancy is found a second diagnosis must be made to recognize or eliminate the presence of pregnancy and ovarian cyst, pregnancy and ascites, pleural pregnancy, hydatid mole, a very large child, or malformed foetus. In the hydatid mole the pear-shaped uterus has little fluctuation, and there is repeated discharge of blood. In a large or malformed foetus the heart can usually be heard and palpation reveals the child. Twin pregnancy may be completely mistaken for polyhydramnios. Misleading phenomena, such as absence of such tension upon the membranes as would be expected from the quantity of amniotic liquid, and the absence of early shortening of the cervix, are mentioned.

Treatment by drugs is without avail. When distention increases rapidly and the patient's health is impaired, the cervix should be dilated to admit the finger, under thorough aseptic precautions, the membranes ruptured, and the fluid drained gradually until the presenting part descends firmly against the cervix. Labor should not be allowed to be precipitated, nor should it be hurried in the interests of the child, as it is often deformed. Polyhydramnios is dangerous to the mother

¹ New York Medical Journal, July 12, 1902.

from overdistention, relaxation, hemorrhage, and increased danger of sepsis. The uterus must be completely emptied and made to contract. Hot intra-uterine douching with 1 per cent. lysol solution, tamponing with iodoform gauze, the hypodermic use of strychnine and ergot, and other stimulation are necessary.

Deciduoma Malignum. Since Sanger reported his case thirteen years ago there has been a constant increase in the flood of literature descriptive of this condition. Many cases reported and the discussions following have succeeded in surrounding the subject with such uncertainty that we welcome an effort to clear the fog and establish its true pathological status. In an article entitled "Is there any Real Deciduoma Malignum?" Herbert Snow¹ attempts to do so. The writer says he does not intend to deny the long-established sequence of malignant developments following immediately upon and often unmistakably caused by the trauma of parturition, but his purpose is to investigate how far these developments show any title to a special term differentiating them from the ordinary cancerous new-growths appearing in or about the uterus without any question of pregnancy. Sanger² in 1889 reported the following case: A primipara, aged twenty-three years, fell from a railway carriage and aborted at the eighth week. For three weeks she had continuous hemorrhage and in the fourth week a high fever. Curettement relieved the bleeding, but an extensive inflammatory exudate appeared surrounding the uterus, which also increased in size. Death took place seven months afterward, with signs of pulmonary metastasis. Microscopic examination showed the growth to be sarcoma. Sanger thought it had developed in the decidua, because it contained numbers of large cells identical with decidual cells, and also "plasmodia" resembling the decidual giant cells. He did not suggest that fetal structures played any part in the development. The writer says the difficulty in accepting this view is in the fact that the decidua contains no cell elements distinguishable from those of ordinary connective tissue; so that even if the decidua or some remnant of it did generate a new-growth we should not be able to differentiate this microscopically from ordinary sarcoma or myosarcoma. To designate the disease a distinct cancer species, it would be requisite to demonstrate special symptoms or a clinical career materially differing from that of the latter.

The question has been considerably expanded and obscured since 1889 by becoming mixed with that of placental development, and with the controversy as to whether the terminal epithelial layers of the

¹ British Gynecological Journal, August, 1902.

² Ueber Sarcoma Uteri Deciduo—Cellulare, Centralbl. fur Gynak.

chorionic villi are both fetal or one maternal. The outer layer, considered by some to be maternal, is described as "a thin stratum of granular protoplasm showing no differentiation into cells." At irregular intervals are small oval nuclei. This layer constitutes the—in this connection—highly celebrated "syncytium" and often spreads out into large "plasmodia." The inner layer (Langhans') consists, on the other hand, of distinctly differentiated epithelial cells with large round or oval nuclei.

Some contend that this layer is not concerned in the generation of deciduoma malignum, though every microscopist must recognize the difficulty of establishing such a position when a malignant growth is in question. The reference of deciduoma malignum to the chorionic epithelium obviously controverts the views of Sānger and implies that the title he bestowed upon it is erroneous.

Assuming for the moment that the reference is accurate, we then ask whether there is a specific *epithelial* cell element which will enable us to differentiate deciduoma malignum when we meet it? It has been shown that there is no such element of connective tissue origin, because the decidua contains no pathognomonic cell whatever. Everything here turns on the "syncytium," and the "plasmodial masses" supposed to be derived therefrom. No chorionic villi have ever been proved in these growths. The writer refers to the impossibility of any pathologist giving a definite opinion from microphotographs. A conscientious drawing *may* convey the truth, but a microphotograph *cannot*. The habit universal among professional pathologists of examining prepared sections only involves numerous errors. A prepared thin section admirably displays the histology of a morbid growth, and the correlation or distribution of its component cells. But, as a rule, the process of section cutting completely disguises the shape of these cells, to say nothing of the other important characters. On a correct appreciation, however, of the shape an accurate recognition of the species of malignant lesion commonly hinges. No microscopic report in such a case should be held valid without resort to both methods. It should contain a description of the individual cells as nearly as possible in their natural state, in addition to the routine account of their distribution in the prepared thin section.

These cases of deciduoma malignum have been mostly reported by gynecologists whose experience consists of one or two cases and with whom pathology is hardly a strong point. Experts state that there is absolutely nothing in the so-called plasmodial cell masses which cannot be exactly paralleled by the sections of any rapidly growing sarcoma from other parts of the body. The differentiation of deciduoma malignum

num on microscopic evidence alone, whether an epithelial or connective tissue origin is questioned, thus falls to the ground.

The clinical histories of a number of cases are also carefully reviewed in order to determine whether there is anything in them to warrant the view of a distinct cancer species. The decision is negative, and the writer, after giving Eden's verdict on the twenty-eight cases reported up to 1896, "Several were ordinary forms of uterine cancer, the remainder all possess the general characteristics of sarcomata," submits his conclusions as follows: The term "deciduoma malignum" is misleading and unscientific. So far no valid evidence of the generation of malignant growths from placental structures, whether decidual or chorionic, has yet been adduced; that the lesions described under the above title do not differ microscopically or clinically from the ordinary malignant diseases of the uterus—carcinoma, sarcoma, or myosarcoma. The practical bearing of these cases has been overlooked, for the records of a considerable number indicate that the malignancy had commenced before impregnation, but had not been recognized until, in most instances, abortion—in a very few delivery at full term—had taken place. The latter event is, however, rare, and not to be accepted without scrutiny. We find extensive lesions which must have been present long before parturition. What we know of cancer causation elsewhere renders it highly improbable that they can have begun during pregnancy. Cancer is never set up while healthy cell proliferation is going on. Then the only inference possible is that the malignant development must have begun before impregnation, the phenomena of cancer in the uterine body, always for a time obscure and insidious, being masked by the pregnancy. The only valid treatment is complete hysterectomy. With greater circumspection and more accurate diagnosis in the early months of pregnancy; with recognition of a possible malignant condition concurrent with a living foetus; with the precaution to dilate and examine digitally before resorting to the curette during the puerperium, some of the disasters related should be rendered impossible in the future.

Recurrent Abortion. Recurrent or habitual abortion has been discussed by J. W. Taylor.¹ He makes special reference to that form due to deficient vitality of the mother or both parents, and often associated with some history of tuberculosis. In his classification he includes under the title of recurrent abortion only those cases where from the beginning or from some definite epoch the patient has aborted with every succeeding pregnancy, and with one exception only he has restricted it to cases of initial or primary recurrent abortion; that is, to

¹ British Medical Journal, April 11, 1903.

patients who from the beginning of their married life until the date of coming under observation have never been able to bear a living child at term. Syphilis is undoubtedly one of the chief causes. One of the rarer forms may be due to intraperitoneal adhesions involving the uterus. There comes a time when the uterus cannot enlarge further without starting fresh and sometimes fatal mischief. It then either empties itself or some leakage with acute appendicitis may take place, or abortion and peritonitis may occur almost simultaneously.

Another rare cause is kidney disease with albuminuria. A deep laceration of the cervix is another very rare one; the possibility of criminal interference must also be borne in mind. Taking into account all these rare causes and including syphilis, there still remains a definite group very rarely equal in importance to syphilis, and the most distinguishing characteristics binding these cases together are: 1. Indications of a low vitality on the part of the mother or father or both parents. 2. A "strumous" family history. 3. The remarkable result of an essentially "antistrumous" treatment, when carried on for a long period of time or throughout the whole of pregnancy. Twelve such cases between the ages of twenty and thirty-four he tabulates and analyzes. All had had repeated consecutive miscarriages or abortions. Only two had ever had living children, and these died within a few weeks. In one case no history of consumption, fistula, or any other strumous disease was elicited. In two or three cases the history was doubtful, but in the majority of cases there was a fairly clear history, direct or indirect, of strumous disease on both sides. The one case without a strumous history was treated throughout pregnancy by ext. viburnum prunifolium liq., ℥xv-xx, twice daily, and ol. morrhue, ʒss, daily. In another case of transient albuminuria the patient was given a liberal milk diet and syr. ferri hypophosph. comp. according to Parrish's formula. The remaining ten cases were treated with both syr. ferri hypophosph. comp., ʒj t. d. s., and with gradually increasing doses of ol. morrhue, ʒj-ʒss t. d. s., while they were under his care. As to results, taking the cases seriatim, the first, fourth, sixth, and ninth at the time of writing were pregnant and quite well; the second, third, seventh, and tenth had been delivered of healthy, strong babies; the fifth had a miscarriage at six and one-half months; the eighth, eleventh, and twelfth discontinued treatment, and were lost sight of after one or two months' treatment. Contrasting the clinical history of this group of cases with those due to syphilis, the general characters of the recurrence are different. In syphilitic cases succeeding pregnancies have a tendency to prolong the pregnancy beyond the time at which the preceding one terminated. In the "strumous" class the natural tendency

is rather of a "downward" character unless something is done to improve the general health. Each succeeding abortion tends to further weaken the patient and occur at an earlier period.

Secondly, the clinical histories of the miscarriages themselves are different. In syphilis, while abortion may occur spontaneously and without difficulty, in a large proportion of cases there is some difficulty connected with it. The products are retained, occasionally become septic, and need removal. In such cases the placenta is often adherent, can only be detached by careful curetting, and this may have to be repeated after each succeeding abortion. In the strumous class such a history is unknown. With the exception of the case mentioned, all the sixty cases he referred to took place apparently easy, and, as he believes, without normal interference.

Finally, the general character of the aborted product is different. In syphilitic cases with placental disease this is larger, thicker, more fleshy, patchy, and paler than normal. It often shows evidences of adhesion and tearing. In the "strumous class," he says from his experience it is difficult to say that there is anything definitely characteristic in the earlier miscarriages; the ovum is often apoplectic, and there is a hemorrhagic mole with little or no trace of a foetus, but these differ but little from other abortions which are the result of accidental bleeding. In later abortions from clinical observations alone he is unable to say whether there is any distinguishing feature characterizing either foetus or placenta, and further observations are needed to establish the presence or not of pathological changes in these cases. He attaches chief importance to the defective vitality of the mother in these cases of recurrent abortion, and everything which tends to improve the general health of the mother and child, including the persistent administration of lime salts and easily digested fat, is of great importance in successful treatment.

Ectopic Gestation.¹ The great activity of the profession in the investigation of ectopic gestation in the last decade and the discussions upon the subject have increased the knowledge of the general practitioner, so that at present it is estimated that the majority of the cases with which the family physician comes in contact are recognized by him. W. Hahn² has collected statistical data from all the Vienna hospitals in relation to the frequency of this condition. From 1892 to 1899, 241 laparotomies and 45 vaginal sections were done for extra-uterine pregnancies; there were 21 deaths among the laparotomies and 7 among the vaginal sections. As these records do not include private cases, they are undoubtedly somewhat below the actual figures. The

¹ PROGRESSIVE MEDICINE, June, 1903.

² Münchener med. Wochenschrift, February 10, 1903.

most frequent cause the author found is gonorrhœa, which in later years has become more prevalent. Our more exact knowledge of history and symptoms and skill in diagnosis has enabled us to more frequently recognize this condition than formerly. S. W. Bandler,¹ in a discussion of the etiology, says that external migration occurs frequently in tubal gestation. Küstner found it to occur seven times in a series of 25 cases. Prochownik observed its occurrence in 1 case in 8. Martin found the corpus luteum on the same side as the tubal gestation in 37 cases, on the opposite side in 4, and uncertain in 36. Sippel and others also regard external migration as the etiological factor. In considering the histories of cases it has been noted that ectopic gestation occurs most frequently in multipara, and a sterile period of varying length precedes this pathological development. In a series of 8 closely examined cases Prochownik found a gonorrhœal history three times. Moskowitz found that of 2 cases tuberculosis was the etiological factor in 1. In the other gonococci and staphylococci were present in the pyosalpinx of the non-pregnant tube. Franz believes inflammatory changes in the tubes are responsible for the occurrence of ectopic gestation, and concludes we must seek the etiology in those affections of the tubes which have run their course and which, having for a long time prevented the moving of the ovum, have permitted a gradual and partial restoration to normal conditions. The apparent absence of any pathological change in some cases may be explained by the fact that so-called catarrhal changes show little microscopic change. Various inflammatory influences are etiological factors in that they destroy the cilia in whole or part, thereby diminishing or destroying their functional activity, and it is in these changes with the injury to the cilia that he believes we find the etiological factor in tubal gestation. The typical symptoms of this disease are the non-appearance of menstruation when due with the signs of pregnancy in a patient who has previously been regular, and the symptoms of partial or complete rupture following in from a few days to five or six weeks. Symptoms usually begin to manifest themselves in five or seven days after the expected flow. Pain, cramp-like in character, low down in the abdomen on the affected side, is usually the first symptom. It is severe and usually lasts one or two hours, then subsides, perhaps, for several days. Following the cramp-like pain there is usually some flow of blood; it is often supposed by the patient to be the menstrual flow, but is darker and thicker than normal. The condition may be a tubal abortion or a partial or complete tubal rupture. In the latter case there is more severe pain and partial or complete collapse may occur, due to the rupture and hemorrhage. In cases where there is any doubt a vaginal examination

¹ Medical News, March 14, 1903.

should be insisted upon. The uterus is felt slightly enlarged and softer than normal. A mass will generally be felt to either side of the uterus or in the cul-de-sac unless the rupture has been complete and recent and the blood is still free in the general peritoneal cavity, when a fulness may be detected in the cul-de-sac. The longer the blood remains in the general cavity the more firm it becomes. H. J. Boldt¹ states that there are but two methods of treatment worth considering—the conservative and operative. If a patient be seen with a tubal abortion in progress and the examination reveals the blood well formed into a clot, it may be permissible to watch and wait provided she be so situated that immediate surgical aid may be rendered if necessary. She should be put at absolute rest on a liquid diet, with ice to the abdomen, and morphine should be given to secure the absolute rest necessary. In favorable cases the tumor becomes smaller and more firm; or, if a patient's history and symptoms show that complete tubal abortion has occurred, confirmed by the absence of an enlarged tube, provided she has recovered from the shock, the same treatment may be pursued. A mass will form in a few days, and its progress can be carefully watched. Progressive cases and those not having a well-defined hæmatocele should be operated upon at once. The abdomen is opened and the bleeding point located and controlled as soon as possible. The blood and clots should be removed, but it is not necessary to remove all the fluid blood from the abdominal cavity. Hot saline solution should be introduced, and it may be necessary to give an intravenous infusion.

Rieck² does not believe that it is always necessary to operate upon cases diagnosed as extra-uterine pregnancy. He relates a case of Martin's which was allowed to go to the eighth month before performing a laparotomy. A living child was removed from among the intestines. As a rule, he believes there is not much danger of the mother bleeding to death by the rupture of the tubal sac and that a conservative treatment is indicated. The typical history of extra-uterine pregnancy is recounted, and the writer says the symptoms are diminished by rest in bed, but become worse when the patient gets about. When consulted the physician generally finds her general condition fair. The pulse is strong but quick, and the temperature slightly above normal. The uterus can be palpated, and is found moderately enlarged. On the right or left side a tumor about the size of an orange is felt. Soft masses may also be palpated in Douglas' cul-de-sac. In those cases where profuse hemorrhage has occurred, the whole posterior part of the pelvis is filled by the blood and the uterus pushed forward against the pubis. These cases he styles the "ambulant" form in contradistinc-

¹ Medical Record, January 10, 1903.

² Münchener med. Wochenschrift, August 5, 1902.

tion to those in which the patient has a sudden large hemorrhage and is collapsed and rendered extremely anæmic. In the latter an operation is imperative. An abdominal section is indicated and if done quickly the prognosis is good. In the "ambulant" form the physician must decide which form of treatment he will adopt. If he adopts the conservative form, it means a very long treatment. The operative treatment should be contrasted with this, and the dangers of shock, peritonitis, chronic intestinal obstruction, possible infection of the wound, and ventral hernia considered in making your choice. He believes most of the dangers of operating per vaginam disappear in skilled hands. The technique of the vaginal method is given, and the writer says he expects it will in the future supersede the abdominal method.

OPERATIVE TREATMENT OF TUBAL PREGNANCY THROUGH THE VAGINA. In the general discussion of tubal pregnancy P. Strassman¹ believes that the great increase in the number of cases during the last two centuries is due to a large extent to our development of a more accurate and improved diagnosis. The impregnation of the ovum takes place normally at the fimbriated extremity of the Fallopian tube, and the impregnated ovum is carried into the uterus by the movements of the muscular coat of the tube and the cilia of the lining epithelium. Any cause which will interfere with either of these functions will increase the chance of the ovum remaining in the tube. Thus inflammatory diseases will dispose to such a condition, but the writer believes we are going too far when we say gonorrhœa is the common cause of this condition. Concerning operation, the writer says, attack it in one of three ways: 1. By laparotomy. 2. By the expectant treatment. 3. By the vaginal method. He has treated nine cases by the latter method and reports favorable results. In five cases the anterior vaginal vault was opened; in four, the posterior. All cases were in the first four months of pregnancy. The day before the operation the patients are given a fluid diet and the bowels are opened by a laxative, followed in the evening by large doses of bismuth and codeine. He prefers a soapy antiseptic—lysoform—as alcohol and sublimate render the operation more difficult. He first cures the uterus, then selects the best situation for opening the vault. Catgut is used for ligatures and sutures, and the chief vessels are tied twice. Each case should be treated upon its own merits.

Both ovaries should be examined, but neither removed unless there is just reason. The vaginal wound is closed without drainage and any injury to the perineum repaired by isolated sutures. The after-treatment consists in catheterizing during the first day, opening the bowels during

¹ Berliner klin. Wochenschrift, Nos. 24, 25, 26, 1902.

the fourth day, and rest in bed twelve to fourteen days. All his cases recovered, and all cases reported in literature, with the exception of one in which the fetal sac was incised through the vaginal opening and the parts drained.

It should be noted that surgeons in America, where vaginal sections have not been so popular as abroad, are agreed that vaginal operations for recent ruptured tubal pregnancy are oftentimes dangerous from uncontrollable hemorrhage, necessitating either abdominal section or ablation of organs which otherwise do not require removal. Last year I¹ noted the comparative mortality between the expectant and radical treatment, and found that the prompt treatment by abdominal section for all cases of recent rupture offered the best general results. Vaginal section should be reserved for long-standing cases where either an old collection of blood or of pus requires drainage. Experiences during the past year have developed no facts or results to modify that view.

DIFFERENTIAL DIAGNOSIS OF EXTRA-UTERINE GESTATION WITH RUPTURE AND APPENDICITIS. Legueu² discusses this subject, because, as he says, though there is generally no difficulty in establishing the diagnosis, occasionally an error is made on account of the absence or undue predominance of some single symptom. As instances of this he cites diminution of the signs of internal hemorrhage, localization of pain in the right side or a high temperature, causing one to think the diagnosis is appendicitis. In extra-uterine gestation, however, the surgeon should be guided by those certain definite signs, viz., absence of muscular contracture over the right iliac fossa, and the pallid face of the patient, strongly contrasting with the leaden aspect of the patient suffering with appendicitis. Attacks of syncope or a tendency to such attacks, which are almost always present in the rupture of an extra-uterine pregnancy, should lead one to suspect internal hemorrhage. In doubtful cases absence of rigidity in the right iliac fossa, pallor of the face, and especially syncope, should lead the surgeon to diagnose extra-uterine pregnancy.

Complications of Pregnancy. TUBERCULOUS LARYNGITIS. The relationship between pregnancy and tuberculosis of the larynx has heretofore been largely ignored, and the literature upon the subject is quite insignificant. A. Kuttner³ has presented a paper in which he adds 26 new cases to the 7 previously reported; 14 of his cases have been carefully studied. In 11 of these cases lung disease was either absent at the time or present in only the slightest degree, and the laryngeal symptoms appeared first during pregnancy. In 3

¹ *PROGRESSIVE MEDICINE*, September, 1902.

² *Bull. et Mém. de la Soc. de Chir. de Paris*, No. 31, 1902.

³ *Transactions of the British Congress*, vol. iii. p. 355.

cases it was evident that lung disease had preceded conception. In only 1 case was the larynx involved before pregnancy. In 11 cases laryngeal involvement began during the first half of pregnancy, and none of the women went to full term, although three bore children in the ninth month. Eight infants were born in the eighth month, and three in the seventh month. All were born alive, and 7 died during the first three weeks. Of the series of 14 cases carefully studied all the women died sooner or later after parturition. In the other series of cases some of the mothers made a relative recovery after labor. These cases should, when possible, be interrupted early in pregnancy. If they progress to labor tracheotomy should be performed before it takes place.

CERVICITIS AND ENDOCERVICITIS. Bossi¹ states that these conditions are much more frequently found complicating pregnancy than is generally supposed. The causes are abortions, premature labors, abnormal pregnancies, and complications during labor or the puerperal period. All of these causes are so frequently overlooked or ignored by patients and some accoucheurs that it is considered important to refer to them. The gynecological examination of pregnant women when properly performed is harmless, and should be performed when symptoms point to a complication which may be treated in time to avoid serious results. His treatment consists of disinfectant vaginal douches, cauterization, and dusting with powders. For the douches he advises the daily use of a litre and a half of boiled water, containing 40 grammes (3 x) of borate of soda, alternating with a solution of $\frac{1}{2}$ gramme ($7\frac{1}{2}$ gr.) corrosive sublimate to a litre and a half of boiled water. As the condition improves the douches may be taken every two, three, four, or five days, as the condition indicates, until, finally, they are stopped altogether. In order to avoid all danger of causing uterine contractions the douche bag should be suspended not more than three feet above the patient's pelvis, the patient being in the gynecological position. The vaginal tip should only be inserted about half-way into the vagina, and the solution allowed to flow slowly by partially compressing the tube. For cauterizing the author uses carbolic acid in 50 per cent. alcohol and zinc chloride in a 30 per cent. solution; the latter is used in the severer cases. Cauterization may be performed once a week, vaginal douches being used daily in the intervals of treatment. After cauterization a tampon saturated with a 1 : 3000 bichloride of mercury solution is applied to the vagina. After this the vagina is dried with absorbent cotton and the following powder dusted on: Salol, iodol, bismuth, pulv. amyli, pulv. lycopodii, $\bar{a}\bar{a}$ 1 gramme (gr. xvj). Should

¹ Archiv. Ital. di Gin., vol. iv., No. 5.

this treatment not accomplish the desired result in severe lacerations, Emmet's operation will have to be resorted to.

ACUTE OEDEMA OF THE CERVIX. Varnier¹ reports a case of this complication in which the patient went to full term. The patient was in her third pregnancy. In 1894 she had had a cystic tumor of her left ovary removed. She made a good and rapid recovery, and her periods were regular until January, 1898.

In August, 1898, she suffered acutely from facial neuralgia. Bearing-down pains suddenly set in, and she found that something was protruding at the vulva. Upon examination the writer found the cervix protruding about three inches beyond the vulvar cleft, forming a mass over eight inches in circumference, very tense and so shiny as to reflect like a mirror. The external os formed the outer extremity of the tumor, and the vaginal mucous membrane formed a pedicle-like mass. The bladder had not descended. The swollen, oedematous cervix was punctured without causing any pain to the patient, and quantities of clear serum escaped. The patient was placed in the Trendelenburg position and the cervix reduced by taxis. Eleven days later it recurred, and the midwife in attendance reduced it. Three weeks after this the cervix again descended, but it was reduced after two hours by rest in bed. The last prolapse occurred eleven days after this. It occurred when the patient was in bed and it was reduced spontaneously. On October 6th, 276 days after the end of her last period, labor began. The position was transverse, and for several hours the cervix remained long and high in the pelvis.

Version was finally effected, and the head brought down. The cervix then dilated fully, and thirteen hours after labor began a child weighing seven pounds was delivered. Three weeks afterward the pelvis was explored, and no hypertrophic elongation of the cervix was found, showing it had been transitory during the pregnancy and caused by the oedema. A slight prolapse of the anterior vaginal wall was also present, probably due to straining. The uterus was retroverted and the cervix was large. The body of the uterus had not prolapsed with the cervix.

PYONEPHROSIS. A case is reported by Cumston,² the patient being at the end of the fourth month in her third pregnancy. Her two previous pregnancies had been uncomplicated, and terminated normally. She had had cystitis two years previously, but it had soon yielded to treatment. Her general condition was good. Appetite and bowels were normal, as were also the pulse and temperature. There was no oedema present. The urine was dark and contained much thick sediment.

¹ *Compt. Rend. de la Soc. d'Obstét. de Gyn. et de Péd. de Paris*, May, 1902.

² *New York Medical Journal*, January 28, 1902.

There was a right-sided abdominal tumor which on percussion was found to extend from the lower edge of the right lung to the crest of the ilium and backward to the spine. The area of dullness did not change with change in position. The tubes, ovaries, and left kidney could not be palpated on account of the abdominal distention. Ascites was thought to be absent. In twenty-four hours about 2000 c.c. (63 $\bar{5}$) of purulent acid urine was passed. It contained albumin, pus cells, bladder epithelium, and bacteria, but no casts or gonococci. By catheterizing both ureters it was found that the secretion from the left kidney was normal. It was determined to operate, and an incision was made in the lumbar region exposing the convex surface of the kidney. This was incised and 1500 c.c. (47 $\bar{3}$) of thin, purulent fluid escaped. A fluctuating mass was palpated higher up. This was opened with a pair of long scissors and 300 c.c. (10 $\bar{3}$) of thick pus escaped. The cavities were irrigated and drainage tubes inserted and packed with gauze, as there was apparently considerable healthy parenchyma and it was hoped to partly re-establish the function. The tubes were removed in one week, the cavities irrigated and repacked with wicking. Five days later she had a chill; temperature 104° F., pulse 135. The wound was reopened and putrid pus escaped. A nephrectomy was then done, and a kidney the size of a full-term child's head was, with great difficulty, dissected out. It contained three large and numerous small cysts. She was placed upon an exclusive milk diet, given 7½ grs. of urotropin three times a day, also acetate of potassium. In four days she was secreting 1100 c.c. (34 $\bar{5}$) of urine which was free from albumin, casts, or blood. The ureter was found inserted obliquely into the pelvis of the kidney, forming an acute angle, and was also greatly narrowed where it joined.

This anatomical arrangement the writer thinks produced a congenital hydronephrosis, upon which the pyonephrosis was grafted. Only three cases of nephrectomy in pregnant women are reported. In no case was the pregnancy interrupted. Pyonephrosis in gestation demands active operative measures, because of the aggravation caused by the condition. It is probable that patients with only one kidney would have less resistance to the formation of a chronic nephritis or eclampsia.

HÆMATURIA. In a thesis Bouman¹ collected seventeen cases. In all cases the blood was undoubtedly from the kidney. It disappeared after labor and in some cases returned in a succeeding pregnancy. The writer does not believe that the bleeding represents an "essential hæmaturia" as reported in previously published cases. Schade and Klempner removed the kidney in "essential hæmaturia," but no his-

¹ Monatschrift f. Geb. u. Gyn., June, 1902.

tological changes were manifest. Broca, Loumeau and Debesargues practised nephrotomy, but nothing further, as no marked changes in appearance could be seen. Whether this affection is a form of hæmophilia or is due to some form of a neurosis is not determined. In his cases the writer believes that there was renal disease before conception and that the pregnancy aggravated it either through autointoxication or congestion. In one case the hæmaturia ceased suddenly upon the rupturing of the membranes. In another blood reappeared during lactation. Disease has been detected in several cases. Guyon discovered tuberculosis of the kidney in a case in which bleeding recurred a year after delivery. Van Herson also reports such a case, while Treub reports the recurrence of the bleeding without pregnancy. In another case in which an abortion had been performed at the second month of her second pregnancy for kidney symptoms, hæmaturia set in during the fourth pregnancy. It was solely renal, and ceased entirely after delivery.

RECTAL CANCER.¹ Pregnancy complicated by cancer of the rectum is extremely rare, only thirteen well-authenticated cases being reported in the literature. This fact is explained upon the grounds that cancer usually follows the climacteric, and that carcinoma of the rectum is more rare in women than in men. Halzapfel believes the proper procedure, from the standpoint of obstetrics, in such a case is the total extirpation of the growth because its presence so narrows the pelvic canal that a living child can hardly be born. In cases, however, where the cancer itself does not permit of operation, other preparations should be made for the birth of a living child. Inoperable cancers ordinarily take up much space in the pelvis, and the birth of a full-term living child through the natural channel is almost always impossible. Cæsarean section is almost always necessary. Seven of the cases reported in literature were so treated. If the carcinoma is advancing so rapidly that the death of the mother is foreshadowed before the termination of the pregnancy, Cæsarean section must be done, or if there is sufficient room in the birth canal premature labor must be induced. When the child is already dead within the womb and the woman presents inoperable cancer, Cæsarean section must be performed only when other obstetric operations are no longer possible on account of narrowing of the pelvis.

Carcinomatous tissue, it must be remembered, has little elasticity, and is, therefore, easily torn. Cruveilhier and Kürsteiner both reported great damage to the rectum in extracting the child under such conditions. In many of these cases, however, a vaginal operation will per-

¹ See PROGRESSIVE MEDICINE, June, 1903.

mit the delivery of the child with sufficient readiness, and yet with greater safety to the mother than a Cæsarean section. In those cases which permit of operation¹ the procedure must be carried out as quickly as possible. The chief question is whether the pregnancy should be ended first and then the growth removed or *vice versa*. The only case of carcinoma of the rectum reported operated upon as late as the sixth month was followed by abortion four days after, and the death of the mother on the fifth day. With only this case as a guide it is impossible to say that no operations should be done during pregnancy. Probably a good rule will be that if the tumor is small and situated low down in the rectum its removal without interfering with the pregnancy is proper. During such an operation one should expect greater hemorrhage, because in this condition all the organs of the pelvis are more richly supplied with blood. It would also in the majority of cases be natural to expect abortion, not only through infection, but also through various accidental damages to the womb and its contents. Since the lochia will invade any wound it is advisable to separate the operations of abortion and removing the neoplasm by as many days as possible.²

UTERINE FIBROIDS IN PREGNANCY. Méhnet³ has collected and studied the cases of pregnancy in the Baudelocque clinic between 1895 and 1902 which were complicated by uterine fibromyoma. He concludes that the condition is not dangerous, and that serious accidents are the exception. However, the case should be well watched. Sixty-seven of the eighty-five cases went to term, thirteen had premature births, three abortions, and two were operated upon during pregnancy. In only two cases the fibroid caused the death of the patient. Our aim should be to let the pregnancy advance to term as far as is considered safe. Should the patient's life become endangered operative interference should be resorted to at once. At the meeting of the American Gynecological Society (May, 1903) the treatment in cases of pregnancy complicated by fibroid tumor was discussed. Coe opened the discussion and presented the matter in the following practical manner:

Fibroids complicate pregnancy because they interfere with the normal development of the pregnant uterus, cause distressing symptoms, or jeopardize the life of fœtus or mother. Each case must be studied separately, and the decision as to the treatment will vary with the patient, tumor, experience, and bias of the surgeon. Attention must be paid to the influence of the tumor on pregnancy, and of pregnancy on the tumor—increased growth, degenerative changes, environment, etc. There are three “semesters” of pregnancy:

1. Up to fourth month: (a) Empty the uterus in the case of large

¹ Z. Endleman, *Centralb. f. Gynäk.*, No. 32, 1902.

² *Medical News*, October 11, 1902.

³ *L'obstét.*, November, 1902.

interstitial or broad ligament tumors, or where they are situated in the lower uterine segment; also in case of impacted intrapelvic growths. (b) Enucleate small tumors per vaginam if possible, though pregnancy will usually be interrupted. Remove intra-uterine polypi if accessible. (c) Enucleation by abdominal route. Removal of subperitoneal pedunculated growths. (d) Free impacted growths under anæsthesia (when no adhesions are present), and keep them out of the pelvis until they are kept out of the way by the growing uterus. The wishes of the patient should be followed so far as this can be done safely.

2. Fourth to seventh month: Location of tumor important as well as size and variety. Pain and pressure symptoms furnish indications for treatment. (a) Large interstitial growths. May empty uterus, though danger of hemorrhage greater. (b) Enucleation by abdominal route; propriety of removing multiple small tumors which do not encroach on uterine cavity. Wait until child is viable. (c) Keep patient under observation. Patient may go to full term and be delivered normally. (d) Impacted tumors, pressing on bladder, ureter, or bowel may call for radical operation. (e) Twisted pedicle, degeneration of tumor, disease of adnexa, peritonitis, etc., may require interference without reference to pregnancy.

3. After sixth month: Obtain viable fœtus, if mother's life is not actually jeopardized. Can she probably be delivered at term? Yes. (a) With subperitoneal growths if not too large and favorably situated. (b) Small interstitial fibroids if not in lower uterine segment. (c) Polypi presenting at os, which can be easily removed at any time.

4. After eighth month the Porro-Cæsarean operation, suprapubic amputation, or hysterectomy, preferably by election—*i. e.*, before full term. There is danger attending induction of labor at this time.

Conclusion: Conservatism should be practised here as in other gynecological operations, but not carried to extremes. The question of marriage and subsequent risks of pregnancy in women with fibroids is important. The time of conservative surgery is often before there is a chance of conception. In general, if a fibroid tumor is to be regarded as a menace to life before pregnancy, the condition must be still more grave after conception occurs. Is it not the duty of the gynecologist to ward off this danger?

PRIMARY (?) PERITONITIS IN PREGNANCY DIAGNOSED INTESTINAL OBSTRUCTION. A case in which acute peritonitis developed in the eighth month of pregnancy without any association with ruptured uterus or other complications of pregnancy is reported by Porak and Katz.¹ The patient, aged thirty-seven years, a nullipara, married fifteen years,

¹ Comp. Rend. de la Soc. d'Obstét. de Gynéc. et de Péd. de Paris, March, 1902.

had chronic nephritis. When seventeen years old she had a very acute attack of nephritis ; since that time occasional lumbar pains with albuminuria and scanty secretion of urine had occurred. She became pregnant in April, 1901, and progressed normally until the first week in the following January, when abdominal pain accompanied by tympanitic distention developed. She passed neither feces nor flatus. Upon examination no evidences of any kind of a hernia were present; the abdomen was not as tender as is usually the case in an attack of acute peritonitis; nothing could be palpated in the fornices per vaginam. She was thought to have intestinal obstruction, and operation was advised and performed. Upon incision a small amount of turbid fluid escaped. Both the large and small intestines were very much distended and ingested. The uterus prevented a satisfactory manipulation of the intestines and a Cæsarean section was done. A child weighing seven and one-quarter pounds was delivered. The placenta, which was attached to the anterior wall, was incised with the uterus; it was detached; the uterus contracted well and was closed by suturing. On further exploration, as no trace of occlusion could be found, the intestines were replaced and the abdominal wound closed. The patient died on the second day following the operation. Autopsy revealed that pseudoileus had again occurred with no mechanical obstruction present; there was a small quantity of bloody fluid in front of the uterus, but no purulent foci. There were two fibroids in the uterine wall: one in the fundus three and one-half inches in diameter, and a small one lower down. The appendages, vermiform appendix, bile ducts, and other viscera and ducts were free from any morbid change. The kidneys were large, pale, and full of emboli, and showed signs of a recent infectious nephritis. The cause of the peritonitis was thus discovered. Possibly the uterus pressed upon some part of the intestine and bacillus coli or toxin infection of the peritoneum followed.

MORTON'S DISEASE IN PREGNANCY. This affection was first described by Gross in 1864, but was established as a distinct disease in 1876 by Morton. It is a malady which has been quite frequently found to be associated with the pregnant state. It is characterized by intense pain in the fourth or one of the other metatarsophalangeal joints; hence some of the names which have been given to it, such as pododynia, metatarsalgia, painful affection of the foot, painful foot, etc. Its etiology has been ascribed to persistent inflammation of the metatarsophalangeal joint, to heredity, injury, malaria, epilepsy, and hysteria, childbirth, uric acid diathesis, and to obliteration of the anterior arch of the foot from much standing. G. Cristalli¹ has collected, including

¹ Archiv. di Ostét. e Ginécol., vol. ix., December, 1902.

his own doubtful case, four in which the disease was associated with pregnancy. His own patient was forty years of age, and had had ten pregnancies. Symptoms of Morton's disease (intermittent attacks of intense pain in the metatarsophalangeal joint of the great toe of the right foot, with no local changes in size, color, or temperature) had been present in the sixth, seventh, ninth, and tenth pregnancies. She had always suffered markedly from the sympathetic phenomena of gestation, and was of a very excitable temperament. During her eighth pregnancy she was absent from home and did not suffer from Morton's disease. During her ninth pregnancy she suffered so severely that a physician advised abortion, which was not accepted. After a careful investigation Cristalli found no discoverable lesions, but noted she was very nervous. After close observation he noted that the attacks usually came on at night and after she had paid a visit to a friend, who was a great sufferer with gout of the foot. This cleared the mystery. It was a case of hysterical irritation of gout in the great toe, predisposed to by weakened inhibitory powers arising from the autointoxication of the pregnant state. The stoppage of the visits to the friend and subcutaneous injection of water near the affected joint completed a cure. In her eleventh pregnancy the visits to her friend were stopped and there was no return of the trouble. The writer believes that the name "Morton's disease" ought to be reserved for the cases in which there is no evident cause of the pain, and no alteration in the joints affected. Cases in which there is only a nervous disturbance of central or peripheral origin of a known nature (as, for instance, hysteria, epilepsy, or neurasthenia), or of an unknown nature.¹

POST-PARTUM HEMORRHAGE. No one measure, we think, at the present time is considered superior to manual compression of the uterus in the attempt to control post-partum hemorrhage. It requires no preparation, such as securing appliances, assistants, instruments, etc., and can be applied without a moment's loss of time. It acts by closing the open uterine sinuses, and thus allowing the organ to gradually regain its tonicity, while at the same time the compression is stimulating the uterus to contraction.

The *New York Medical Journal*, November 8, 1902, discussing this treatment editorially, emphasizes several points mentioned in an article in the *Gaz. hebdomadaire de médecine et de chirurgie*, August 21, 1902. The first is that pressure upon the anterior surface of the uterus, even if the fingers are hooked around its edges, is not always sufficient to accomplish the intended purpose, for the inertia may affect principally the posterior wall, and it is difficult to compress that wall sufficiently by pressing it

¹ British Medical Journal, January 31, 1903.

backward against the vertebral column without forcing the uterus down **into** the pelvic cavity and thus impeding the return circulation. Hence **the** hand should be passed behind the uterus, carrying in the abdominal **wall** from a point as high as the umbilicus if necessary. The uterus is **then** compressed against the posterior surface of the pubic bone or against **the** other hand applied against it in front above the pubes.

Continuous pressure with the flat hand does not always best answer, **for** there are frequently limited areas detected which may best be stimulated by kneading with the fingers, acting independently of the palm. Instead of depressing the uterus it is best to raise it, by carrying the hands down to or beyond the ring of Bandl. Dr. Jean Reure believes that in addition to the direct effect of posterior pressure upon the uterus the hand behind the organ may favor uterine contraction by a reflex irritation of Frankenhauser's ganglion, from which numerous branches pass to the muscular tissue. This idea he admits, however, is only an hypothesis. The utility of applying direct compression to any flaccid areas that may be detected in the uterine wall is based on the idea of Schiff's idiomuscular local contraction, which is limited to that portion of a muscle which immediately receives a stimulus. This phenomenon is most readily produced in a fatigued muscle, and the uterus after delivery is in an analogous state. In this connection might also be mentioned the usefulness of pressure upon the abdominal aorta, with elevation of the hips. This procedure, if properly done, will at once control the hemorrhage, when the uterus may be stimulated to contraction by the other hand or by an assistant if one is at hand.

Such a case is reported by L. D. Sheets.¹ Delivery was normal, but the placenta remained adherent. After fifteen to twenty minutes hemorrhage became very profuse. Forcing his hand through an hour-glass contraction at the fundus of the uterus the placenta was found. Attempts were made to free it, but caused so much pain he had to desist.

Hemorrhage continued, the patient became almost pulseless, and presented all the symptoms of collapse. Pressure over the abdominal aorta was then tried and hemorrhage ceased at once. The patient began to rally, but complained bitterly of cramps in her lower extremities. Another and successful effort was then made to remove the placenta. Stimulation was applied, and the patient made a good recovery.

SECONDARY PUERPERAL HEMORRHAGE. This result, though occurring much less frequently than primary hemorrhage and less thoroughly discussed, nevertheless presents features which make a thorough knowl-

¹ American Medicine, April 11, 1903.

edge of its cause imperative. Atlee,¹ in a paper, reports a case seen in consultation. The patient was delivered June 7th. Labor was normal, but the placenta not coming away immediately, traction was made upon the cord to deliver it. On June 11th she began to lose considerable quantities of clotted and liquid blood at varying intervals. This continued until June 16th, when, almost exsanguinated, the writer saw her for the first time. The skin and mucosæ were blanched; skin covered with cold, clammy sweat; hunger, and some nausea present; pulse small and weak and 160 per minute.

Upon palpation the uterus was found soft and distended, reaching nearly to the umbilicus. When it was kneaded liquid and clotted blood gushed from the vagina. The patient was given a tablespoonful of brandy, her head lowered, and hips brought to the edge of the bed. The os was dilated sufficiently to admit two fingers. While the fundus was controlled by the abdominal hand the uterus was emptied of clots and placental remains, which were attached to the right lower segment. The patient was none the worse generally. A teaspoonful of Squib's ergot was then given, tightly rolled napkins placed over the fundus, and a binder put on. Weak brandy was given in teaspoonful doses, followed later by easily assimilable foods, and a two-grain ergotin pill every four hours was ordered. She made a good recovery, but her milk dried up. In discussing the subject further Parvin's classification as to causes is given: 1. Alteration of the blood—albuminuria, purpura, malaria. 2. Psychic causes. 3. Direct causes belonging immediately to the uterus may be included under two general classes: those which prevent uterine contraction and those which cause uterine congestion. Secondary uterine inertia, uterine fibroids, and possibly uterine adhesions may be included in the first. Lusk mentions a case caused by the uterus being crowded back and downward to the pelvic floor by the compress being too tightly bandaged upon the abdomen by a nurse. Bleeding sometimes occurs from a mild septic endometritis when the patient begins to walk about, but it is improbable it ever approaches the seriousness of hemorrhages. McClintock says a clot remaining in the uterus is a constant risk of hemorrhage as long as it remains. Contamin's statistics attribute six cases out of fifty-six to retained clots. Among unusual causes are mentioned the presence of a rapidly growing ovarian cyst, crowding the uterus upward, caprostasis, distention of the bladder, coughing, aneurism of uterine artery, and thrombus of the cervix. The treatment must be directed to the removal of the cause. The interior of the uterus should be explored by the fingers. Not finding the cause there, examine the pelvic organs, par-

¹ American Journal of Obstetrics and Diseases of Women, October, 1902.

ticularly the bladder and rectum. If no cause can be found in the pelvis the blood condition should be examined for purpura and albuminuria, also the valvular condition of the heart. The uterus should be kept contracted by ergot in conjunction with pressure through the abdominal walls, kept up by compresses and a smoothly applied binder. Should these measures fail, pack the uterine cavity with aseptic gauze. When reduced to the last extremity intra-uterine injections of very hot water may be given, or, as Barnes suggests, a 1 : 3 solution of the liquor ferri perchloride may be used.

Treatment of Placenta Prævia. J. B. de Lee,¹ basing his conclusions upon the study of thirty cases of placenta prævia, says there is no doubt that the mortality of both mother and child needs improvement. He does not believe that such heroic measures as Cæsarean section are needed in the treatment of placenta prævia, for the maternal mortality may be reduced to zero by the usual obstetric methods. As yet he does not consider it justifiable to do a Cæsarean section to simply improve the percentage of infant recoveries, and you may not be able to combat the hemorrhage any better than from below. Retraction of the uterine muscle is not good in the cervix, and, therefore, hæmostasis is uncertain, and it is not improbable if Cæsarean section were generally done that many extirpations of the uterus because of hemorrhage would be necessary.

Accouchement forcé is deservedly unpopular, and it yet remains to be seen whether the new instrument of Bossi, for rapid dilatation of the cervix, may be used successfully. The writer makes the following statements based upon his judgment in the cases reported :

(1) A woman with placenta prævia ought not to die, except in rare instances, as from air embolism or the hemorrhagic diathesis. (2) A case of placenta prævia should not be half-heartedly treated. If the child is viable labor should be induced. When the hemorrhage is very moderate one may wait, provided the patient is in bed in a well-appointed hospital. (3) No one method of treatment will meet all cases. The accoucheur should have all known measures at his command. (4) The young practitioner should follow Schroeder, who says : "That accoucheur will have the best results in placenta prævia who has the least regard for the child." (5) Placenta prævia is a formidable condition, more formidable than most laparotomies, and to insure the best results the patient should be in a well-equipped obstetric operating room. (6) The best way to induce labor is to puncture the bag of waters and to put a colpeurynter in the uterus, resting on the placenta and pressing it against the cervix, and then put traction on the tube.

¹ American Gynecology, August, 1902.

(7) After labor is inaugurated, or should the case be received when it has already begun and hemorrhage more or less severe has occurred, the treatment must be pursued with vigor and the doctor must not leave his patient until she is delivered and out of danger. (8) The treatment is as follows: (a) stop the hemorrhage; (b) empty the uterus; (c) secure contraction and retraction of the uterus; (d) insure complete hæmostasis. The state of the cervix and the degree of hemorrhage indicate the course to pursue.

1. If the hemorrhage is slight, the pains regular and strong, and the cervix dilating satisfactorily, these conditions usually being present with a marginal or only slightly lateral insertion, one must wait, watching the patient carefully. If the hemorrhage becomes greater puncture the bag of waters. This will usually stop hemorrhage, the placenta being allowed to retract with the uterocervical wall and the head slipping down, forcing it against the open sinuses. If this does not stop the hemorrhage and if the cervix is completely dilated, deliver at once—by forceps, if the head presents; by the breech, if the latter presents; by podalic version, if the head is not engaged. If the cervix is not completely dilated the case falls into the second class.

2. The usual condition found is more or less profuse bleeding, the cervix admitting two fingers or more. Pains may or may not be present, but some uterine action must have occurred to have caused the hemorrhage. The writer finds only two procedures worthy of mention: Braxton-Hicks' version, bringing down one foot; and metreurysis, as recommended by Maurer and Dührssen. In delivery he warns against too great traction and too rapid or too early delivery. The cervix is altered in cases of placenta prævia, so that it seems more distensible than it really is. The placental site, with its large sinuses and immense blood supply, is in the zone of dilatation, and a laceration, however superficial, is bound to open a vessel of greater or less magnitude. The retractile power of the lower segment is slight, and, therefore, a hemorrhage from such a laceration is often obstinate and sometimes profuse. In a woman already anæmic or shocked, a fatal termination may be easily precipitated. Braxton-Hicks and Schroeder enjoin slow delivery on this account. The objection to this mode of treatment is its high infant mortality. This gave rise to the treatment by metreurysis. It is applicable at any stage of labor when the cervix is large enough to permit delivery. It may be used to induce labor, and also when version has been tried and failed. After proper preparation of the parts, Carl Braun's colpeurynter, which has been sterilized, is rolled into as compact a roll as possible, grasped by long, blunt forceps, and guided by the fingers placed inside the membranes, resting on the fetal surface of the placenta and the lower part of the uterus and cervix. The forceps

are withdrawn and the bag filled with a weak lysol solution, twelve to sixteen ounces. As the bag distends it presses upon the placenta and pushes the head to one side or upward. The tube is clamped with forceps and traction made upon it. The bag acts like the breech, stops hemorrhage, excites pain, dilates the cervix. If the case promises slow progress, tension should be made upon the bag, relaxing at intervals to allow the blood to enter the cervical tissues. A tension of from one to two pounds should be exerted. The pains usually increase strongly in twenty to thirty minutes, and the bag is expelled in from two to eight hours. As the bag is expelled the physician should be prepared for any operation. He should at once draw out the bag and insert the whole hand into the vagina to determine whether the cervix is fully dilated and whether the head has engaged in the pelvis. If both have occurred the hemorrhage has ceased, and if the fetal heart sounds are normal the case may be left to nature. If the cervix is not completely dilated, version may be done or the colpeurynter may be replaced and filled with enough solution to make it the size of a fetal head—about twenty ounces. The previous manipulations are repeated, and then the child may be delivered by forceps or version without delay, depending upon the conditions. If at any time before the cervix is dilated fully there should arise an indication on the part of the child to deliver it will have to be disregarded. The danger is too great for the mother. An indication for rapid delivery will not arise on the part of the mother, because we can stop the hemorrhage by making a breech presentation or by the colpeurynter. Great hemorrhage and collapse do not indicate rapid delivery. On the contrary, the sudden emptying of the uterus may add to the shock and turn the delicate balance against the woman. In cases where the hemorrhage is great the quickest and most effective way of stopping it is by version and tamponing the lower uterine segment by the breech. The case is then entirely under control, and in such an emergency this procedure cannot be too heartily recommended. The patient should now be stimulated and salt solution injected.

3. Should placenta prævia occur in a primipara or in a multipara and the cervix be closed so that one finger cannot be inserted, the tamponade and vaginal insertion of the colpeurynter have been recommended. The writer has never failed to insert the colpeurynter into the uterus, so that this method has been successful when a Braxton-Hicks version could not be done.

4. Most important is the treatment of the third stage. Many women have been safely piloted thus far and then lost. Some slight cervical laceration occurs in every labor. In placenta prævia a slight laceration may cause a profuse hemorrhage, and if it has been severe a terrific

hemorrhage may be expected. The lower uterine segment being poorly supported with muscular fibres, contracts poorly on the placental site, and it, therefore, bleeds from atony. It is advisable to remove the placenta at once in cases of placenta prævia, and, if the ordinary methods are not successful, to insert the hand for that purpose. Owing to the softness and vascularity of the cervix it may be impossible to sew up a tear or to sew it up quick enough to save an already exsanguinated woman. Therefore, in every placenta prævia be prepared for hemorrhage post-partum. Have hot water, gauze for packing the uterus, and appropriate instruments close at hand, and do not waste valuable seconds on uncertain methods of hæmostasis. If the bleeding is more profuse than it should be or even if only moderate, tampon tightly the whole uterovaginal tract. For this purpose De Lee uses gauze wrung out of $\frac{1}{2}$ per cent. lysol solution. Before, during, or after a case of placenta prævia it may be necessary to treat the attendant anæmia. If the woman has lost much blood, give her salt solution by hypodermoclysis in large amounts. It should be given even if hemorrhage is taking place, as it is supposed that the salt solution increases the coagulability of the blood.

C. D. Palmer¹ says there is no fixed treatment applicable to all cases of placenta prævia at all times and under all circumstances. Treatment must be prompt and well directed by a skilful, intelligent, and courageous mind. The chief dangers to the mother are loss of blood and sepsis; the child's risks are greater. When the first symptom appears the patient should be placed in the recumbent position, as the bleeding may be aggravated by the slightest activity. If labor pains have begun apply a clean abdominal bandage firmly, to further stimulate them and to aid in pressing the presenting part of the fœtus more forcibly against the dilating cervix and lower uterine segment. Do not employ the vaginal tampon, unless the bleeding continues or recurs, providing, of course, the physician is near at hand. Abnormal presentations are relatively more common in placenta prævia. Dudley has little confidence in rubber dilators, and prefers the larger metal dilators and the tampon or fingers. Cæsarean section is rarely justified in a case of placenta prævia. In any case of a complete separation of the placenta, while Simpson's method will arrest the hemorrhage, it ignores the life of the child. Therefore, for the most part it should be used only when the child is dead or not viable or when greater exhaustion of the mother contraindicates delivery by version. Ergot is used more for producing stimulating contractions after dilatation has occurred, never before. If version is reasonably entertained ergot should always be

¹ American Journal of Obstetrics, March, 1903.

given post-partum in this disease, and the recumbent posture should be prolonged several days beyond that of a normal case. Observe strict aseptic and antiseptic precautions and care in handling the parts to avoid sepsis. The loss of large amounts of blood invariably increases the susceptibility to sepsis.

Internal Diseases as Indications for Artificial Interruption of Pregnancy. From his observations in 40,000 cases in his own clinic F. Schauta¹ gives the following indications and contraindications for the artificial interruption of pregnancy when complicated by internal diseases. In severe forms of *polyneuritis gravidarum* induction of premature labor or of abortion is justified for the sake of the mother. Only in the most critical cases of the *chorea* should the interruption of pregnancy be undertaken during the last two months of pregnancy. In moderately severe cases the pregnancy should be interrupted during the first eight months, not later; because parturition generally exercises a deleterious influence upon the mother. Very severe cases of *tetany* necessitate artificial termination of the pregnancy for the mother's sake. In *cerebral tumors*, if the mother is doomed, premature birth must be induced in the interest of the child as soon as the mother becomes unconscious. If the prognosis be doubtful, parturition should not be hastened, because it endangers the mother's life. In *hemiplegias* interruption of pregnancy is indicated only in order to save the child. Psychoses do not constitute an indication unless the patients are emaciated or prone to commit suicide. Affections of the spinal cord and *epilepsy* do not call for artificial interruption, nor does *hysteria*, which will rather grow worse by interference. *Diseases of the eye*, with the exception of retinitis albuminurica produced by nephritis, and diseases of the ear, generally offer no indications for interference.

Such *diseases of the skin* as pityriasis versicolor, pruritus, eczema, pemphigus, and especially herpes gestationis, may during pregnancy produce the most violent symptoms and may be cured or improved by induction of premature labor. Among the diseases of the respiratory system, *pneumonia* and *pleuritis* contraindicate interference; in these cases the fetal life must be sacrificed to the life of the mother. In severe cases of *phthisis* the mother is not saved by premature labor, but will be benefited by artificial abortion performed during the first months of pregnancy. This is the case especially in *tuberculosis of the larynx*. In milder cases in which the tuberculosis is gaining ground interference is indicated also in the last months in the interest of both mother and child. However, a living and healthy child will but seldom be obtained by artificial premature birth. In *miliary tuberculosis* prema-

¹ Monatschrift für Geb. u. Gynäk., October, 1902.

ture labor must be induced as soon as the child is viable. In *pneumothorax*, *bronchitis*, *empyema*, and *asthma* interference is contraindicated. With respect to diseases of the heart, it must be noted that only about one-seventh of all cases of *cardiac lesions* are recognized during pregnancy. Spontaneous interruption takes place in 20.2 per cent. The fetal mortality is 25.5 per cent. Under appropriate treatment the great majority (95 per cent.) survives the exertions of normal parturition. Cardiac lesions when complicated by tuberculosis or chronic nephritis give a very unfavorable prognosis. *Mitral stenosis* seems to be more dangerous than the other cardiac lesions. Only in the rarest cases is the heart disease unfavorably influenced by the existing pregnancy, while parturition in itself is much more dangerous to the heart. In a completely compensated cardiac lesion interruption is only indicated when the life of the patient has been seriously endangered by the cardiac lesion during a previous pregnancy. In mitral stenosis pregnancy must be terminated so soon as the slightest failure in compensation occurs. In uncompensated heart lesions interference must take place at once, when the period during which improvement could be obtained by internal medication promises to be too long. Otherwise internal treatment should first be resorted to, and only after established improvement should the pregnancy be interrupted. Complications with *chronic nephritis* and *tuberculosis* require immediate interference. In regard to disorders of the *digestive tract*, *ptyalism* necessitates induction of premature labor if adequate treatment of an existing genital abnormality fail to check the depraved condition of nutrition of the patient.

Appendicitis should be operated upon irrespective of an existing pregnancy so soon as formation of pus is suspected. Operation for appendicitis is indicated also in serious catarrhal forms of the disease. Induction of premature birth can only be recommended in catarrhal not in purulent appendicitis. In the presence of severe symptoms of *icterus gravis*, such as high fever, petechias, atrophy of the liver, and especially of nervous symptoms of hepatic origin, pregnancy must be interrupted at once. *Hepatic tumors* which produce marked cachexia indicate premature birth in the interest of the mother. In severe *biliary colics*, cholecystectomy must be performed; interruption of pregnancy is contraindicated. In peritonitis induction of premature labor is under no circumstances justifiable. The prognosis of *hyperemesis* is much more favorable than is generally accepted. Interference with the pregnancy is indicated, but very seldom, and then only after all other modes of treatment have failed. Among diseases of the urinary organs *albuminuria* and *nephritis*, when not favorably influenced by proper diet, indicate interruption of pregnancy in the interest of the mother. In chronic nephritis interference is indicated as soon as the child is viable,

or when serious general symptoms occur. The fact of nephritis or *eclampsia* having been present during a previous pregnancy does not necessarily indicate interruption. In eclampsia of milder forms interference should be resorted to only after a trial with morphine and milk diet have failed. *Retinitis* and *amaurosis* require immediate interference. *Hæmaturia* and *hæmoglobinuria* call for the same treatment, and give the same indications as does nephritis. *Pyelonephritis* is first to be treated internally; in case of failure labor should be induced in the thirty-second week. In *splenic leukæmia* and *pernicious anæmia* parturition accelerates the fatal issue. Interruption of pregnancy during the last months may be taken into consideration in the interest of the foetus; otherwise in the diseases mentioned, as well as in *purpura* and *Werlhof's disease*, artificial abortion is justified. *Exophthalmic goitre* requires interruption in the presence of very serious symptoms and metrorrhagias. Among diseases of metabolism *diabetes* justifies artificial abortion, or, if the amount of sugar be not excessive, premature birth. In *osteomalacia* interruption of pregnancy is always indicated.

In most cases induction of premature labor will be the operation of choice, to be followed by resection of the tubes or ablation of the ovaries. In highly contracted osteomalacic pelvis Cæsarean section must be performed, together with resection of the tubes, extirpation of the ovaries, or removal of the uterus. In severe symptoms of osteomalacia at the beginning of pregnancy hysterectomy should be performed during the first month. Most of the infectious diseases contraindicate interruption of pregnancy, generally on account of the danger of septic infection during the puerperium. In certain diseases of this group, such as *influenza*, *malaria recurrens*, *pertussis*, and *parotitis*, the indication to induce premature birth is not given by the diseases proper, but by certain complications arising during their progress. Toxic conditions from *morphine*, *lead*, *mercury*, *nicotine*, and *chronic alcoholism* do not require interference. *Phosphorus poisoning* may sometimes require tamponade of the uterus on account of copious metrorrhagias, and thus indirectly produce interruption. In surgical diseases, such as *myomata*, *cysts*, and *dermoids* artificial abortion is useless. In operable *carcinoma uteri* total extirpation is always indicated irrespective of an existing pregnancy.

In inoperable cancers Cæsarean section is preferable to premature labor in the interest of fetal life. In operable malignant tumors of abdominal organs other than the genitals interruption must be performed if operation would, technically, hinder the operation or if the recovery would be impaired by parturition. In *struma* strumectomy should be done, while interruption of the pregnancy is contraindicated.

Hypertrophy of the mammae during pregnancy may in rare cases form an indication for interference.¹

Interruption of Pregnancy in Phthisical Working Women. Modern observers and writers have altogether abandoned the belief that pregnancy is an advantage to phthisical women, and C. Hamburger² says it is universally conceded that pregnancy and labor, on account of the excessive demands upon the vitality of the woman, are exceedingly unfavorable, as they increase her susceptibility to the disease. His teaching is, therefore, that tuberculous women must not have children.

Pregnancy, when it occurs, should be interrupted in the woman's behalf. He believes that the question must be approached according to the social class of the individual, because the demands upon the strength and vitality are far greater in the working than in the leisure class. As the income of the family decreases the mortality from tuberculosis increases. On that basis Hamburger has studied the actual life of pregnant working women, their incomes, manner of living, the number of children they have, with the purpose of determining their bearing upon the mortality. He found their incomes insufficient to provide them concentrated, nourishing foods, that they usually lived many in one room, and that there were repeated pregnancies at brief intervals. Von Leyden has emphasized the danger from rapidly repeated pregnancies in phthisical women, and it is just among the working women that they are most frequent. In the treatment of tuberculosis good nourishment is indispensable, but during pregnancy we are confronted with anorexia and vomiting. They lack also good air, rest, nourishing foods, careful nursing, and attention during and after confinement.

Concerning the dangers of abortion, he does not regard them as being as serious as the dangers from a prolongation of the pregnancy. He considers the point as to whether the probability of renewed conception and renewed interference would not make any interference inadvisable. His conclusion is that phthisical patients should be instructed by their physician in the dangers of repeated pregnancies. One should not hesitate to destroy a living foetus on the ground that it might possibly develop into a healthy being, for such hopes in this class are almost idle on account of the inability to isolate the child from the mother and provide hygienic surroundings. Therefore, he concludes that we should not hesitate to interrupt pregnancy in phthisical women. The mother's interest as well as that of the family and State demand it.

¹ American Gynecology, January, 1903.

² Berliner klin. Wochenschrift, November 24, 1902.

ECLAMPSIA.

Studies of the etiology of eclampsia emphasize the fact that disturbed metabolism and toxin absorption occupy a more and more important etiological relation. The physician must understand that kidney insufficiency is not an invariable precursor. Several groups of pathological and clinical evidences can now be recognized, in most cases during the preconvulsive stage. Many cases are distinctly associated with kidney failure as evidenced by large amounts of albumin, granular and hyaline casts, diminution in the quantity of urine and in urea elimination. Others may present no signs of kidney changes except a diminution in the total solids and the urea excreted; while other cases may show the urinary excretion practically normal, yet careful study of constitutional symptoms will find evidence of toxæmia. The urinalyses, even when careful urea estimations are made, may not wholly be relied upon. The amount of nitrogen in the food consumed and the excretion of other organs must be known to accurately know the excretory power of the kidneys. This fact does not destroy the value of and necessity for urea estimations. It does, however, impress the necessity for other studies of our patients in order to be warned of approaching danger of toxæmia. In recent years the importance of the liver in relation to eclampsia has steadily grown, and autointoxication from intestinal absorption doubtless plays a rôle in some cases. Undue pressure at the pelvic inlet, splanchnic nerve innervation, the placenta acting as a gland and producing toxins, and, finally, the thyroid gland's function of controlling metabolism are other etiological factors, the two last having received special prominence in investigations during the past two years.

Etiology of Eclampsia. Eclampsia still continues to be one of the greatest causes of anxiety to the obstetrician. Notwithstanding the patient and persistent efforts of the past years, the etiology and pathology still remain obscure, and on account of this obscurity our treatment is empirical.

The whole subject is still shrouded in the mists of ignorance and doubt, and while we are striving persistently to discover the true cause "we are pained to take a slippery hold on theory." Blumreich¹ has demonstrated by experiments the fact that in pregnant animals a condition of increased sensibility to reflex irritation is found in the nervous system. Clinical observation confirms this, in that it shows that eclampsia, tetanus, and chorea are found with special frequency in pregnant women.

¹ Archiv für Gynäk., 1902, Band lxvi., Heft 2.

To determine the source of the irritation causing eclampsia, Blumreich experimented upon pregnant and non-pregnant animals. He produced complete retention of urinary excreta by extirpating both kidneys. The nervous system showed an increased excitability, and very soon in the progress of the case an anæsthetic effect was produced. The animals at times were quiet as if anæsthetized, and at other times ran about restlessly and eagerly. In non-pregnant animals convulsions began on an average of seventy-one hours after operation, and death occurred in seventy-nine hours. In pregnant animals they began sixty-three hours after operation, and death followed on the average in seventy hours. These experiments confirm our belief that the brain of the pregnant animal is more sensitive to irritation than that of the non-pregnant animal, and that the substance or substances which produce convulsions exist in the non-pregnant as well as in the pregnant. Experimental occlusion of the ureters in animals and accidental occlusion in the human subject show that a failure of the kidneys to excrete is not in itself sufficient to produce eclampsia. The kidney at one time was regarded as the seat of the origin of eclampsia. Further investigation caused the abandonment of that view, and to the liver was then ascribed the etiology. It was believed that hepatic insufficiency in the function of destruction and elimination of poisons, and in the transformation of albuminoid substances into urea, was the cause of an autointoxication. This view was strengthened by the fact that in eclampsia there is, as a rule, a diminished amount of urea excreted. Stroganoff¹ believes that eclampsia is logically to be regarded as an infection rather than an autointoxication, and that the infectious theory explains it with more logic and probability. He also says that a thorough study of the data of literature and clinical observation will support the infectious theory only. The isolation of eclamptic cases in the lying-in institute was followed by a decrease in the number of cases developed in that place. Eclampsia he found to be of more frequent occurrence in hospitals than in private practice. Another view of the cause is that it is due to a toxic state of the blood, caused either by an increased production of normal toxins or a decreased or diminished destruction, or excretion through the emunctories, which of the two is not apparent. To thyroid insufficiency or inadequacy has been ascribed the cause. While thyroid treatment has produced some brilliant results in the treatment of eclampsia, sufficient evidence has not yet been adduced to justify us in accepting this theory.

The placental theory advanced by Schmorl is that the eclamptic condition is produced by the presence of a toxin in the maternal blood

¹ Russky Vrach, July 27, 1902.

which has coagulating properties, and which is derived from the placenta.

In his investigations post-mortem he found lesions in the brain, kidneys, liver, etc. These lesions were due to the processes of thrombosis, hemorrhage, and necrosis. Giant cells were found in the pulmonary thrombi, and he believes these to have been of placental origin, for similar cells were found in the uterine veins and free among the placental villi. The fetal theory attributes the production of the eclamptic state to a fetal origin, to a poison generated in the foetus. In support of this theory it may be stated that similar lesions to those found in the mother have been found post-mortem in the foetus. A number of cases have been noted in which the mother's condition improved after the death of the foetus. It is also thought that some deficiency of the placenta in performing its functions may cause an accumulation of toxins in the maternal tissues, thus producing the condition.

About all that we can say definitely at the present time is that "we find eclampsia essentially associated with pregnancy; that there are certain cases in which eclamptic seizures following certain premonitory signs are the result of some unknown conditions associated with the pregnant state."

FETAL THEORY OF ECLAMPSIA. New investigations have been conducted by Dieust¹ regarding the causes of eclampsia. He investigated the theories of causation already advanced and concludes that no one satisfactory specific explanation is given. Those investigators, he thinks, who are searching in both the organs of the mother and of the foetus for the cause are nearer the truth. Autopsies made upon foetuses from eclamptic mothers shortly after delivery showed chronic nephritis, parenchymatous inflammations of liver and heart, and universal thromboses. The thromboses were found to be due to an abnormal amount of fibrin in the fetal blood. The maternal blood likewise contained an abnormal amount of fibrin. He considers that the more fibrin the less favorable the prognosis. The mother's blood in all cases showed a great increase in the number of leucocytes, and the supposition that this hyperleucocytosis and the eclamptic poison are caused by albuminous matter is strengthened by referring to its freezing point, which was found to be below normal. The diminished eliminating power on the part of the mother, causing the retention and absorption of the fetal waste material by the mother, he regards as the primary cause of eclampsia. All conditions which interfere with the activity of the eliminating organs tend to precipitate an eclamptic attack. The

¹ Sammlung klinischer Vorträge, No. 342.

eclamptic spasm is a symptom caused by the specific poisons. The diseases most commonly causing eclampsia are acute and chronic nephritis, heart disease, degeneration of the myocardium, and especially liver disease. Eclampsia without albuminuria is due to imperfect elimination associated with heart and liver insufficiency. Two main indications are noted in the treatment: 1. To stimulate the depressed eliminating function of the mother by cardiac stimulants and diuretics. 2. Prevent the absorption of the fetal eclamptic poisons by the mother by as rapid delivery as is possible. Remove the eclamptic poisons already in the mother's blood; give alkalies liberally by mouth, such as sodium bicarbonate, to assist oxidation and administer them through a stomach tube if the patient is unable to swallow.

Mowton¹ says that the fetal theory of the cause of eclampsia has been developed in our own time, and the same conclusion has been practically simultaneously reached by two investigators. Autopsies reveal to us certain changes found in the tissues of both mother and child, which are only to be explained through the presence of an abnormal amount of toxins in the blood. The secretory organs of the mother, having undergone changes consequent upon pregnancy, are impaired in their capacity for performing their work in a normal manner. Should they be able to perform their functions in this impaired state the subject remains well, but should they not be able to do so a surplus of toxins collects in the system and eclampsia may result.

Two occurrences seem to support this theory. One is that eclampsia occurs more frequently in twin pregnancies, as in these more toxins are produced; and the other, that the death of a foetus *in utero* diminishes the symptoms of threatened eclampsia—*i. e.*, by causing the increased production of toxins. He does not believe that post-partum eclampsia refutes the foetal theory, although many believe that it does. His theory is that although after delivery the increased production of toxins is diminished, the changes causing the toxæmias remaining in the maternal organs are sufficient to produce it.

The Kidney of Pregnancy. The so-called kidney of pregnancy is considered by J. O. Polak.² There are no inflammatory changes, but a fatty infiltration of the epithelium cells lining the uriniferous tubules, associated with anæmia of the organ. Recent observers believe that the changes in the kidney, as well as the hepatic changes, are due to certain imperfectly oxidized metabolic products circulating in the blood, for throughout pregnancy there is a marked tendency to disturbances of the renal function and the occurrence of slight degrees of nephritis,

¹ Centralblatt für Gynäk., October 18, 1902.

² New York Medical Journal, April 25, 1903.

produced by disturbed metabolism, which causes more or less auto-intoxication. It is easy to conceive that the excretory organs of a woman during gestation are more liable to various derangements when called upon to get rid of waste material, the result of maternal and fetal metabolism. Toxæmia is the result of a retention of these imperfectly oxidized metabolic products. Albumin in the urine denotes a renal insufficiency. In large quantities it is always detrimental if not fatal to the foetus. When developed suddenly the dangers to both are greater. The quantity of urine is increased during pregnancy, and it is of a lower specific gravity. The normal constituents, excepting the chlorides, phosphates, and sulphates remain unchanged, while a proportionate amount of urea and other excrementitious substances are eliminated. In about 50 per cent. of all pregnant women at some time during gestation a trace of albumin may be found, but it is only when it appears in abundance and is associated with diminished secretion, caused by an excess of toxins passing out through the kidneys, and contains tube casts that it is important. These conditions, Little finds, occur in 5 to 7 per cent. of pregnancies. The time of its appearance in the urine is significant. When due to renal disease antedating pregnancy it may appear in the early months, while when it occurs in the later months, unless it is in excessive amount, it may be considered as truly a symptom of the kidney of pregnancy. The kidney of pregnancy is practically a condition of the second half, particularly among primiparæ, and the changes from this condition to one of danger in the last month is almost insensible as far as the kidneys are concerned. Hence Polak believes "that the eclamptic explosions are the result of a combined toxæmia, produced by deficient elimination of all the emunctories, of which the intestinal tract is the most potent factor."

While albumin indicates a renal insufficiency its appearance, unless in quantity, is of little clinical significance except it is associated with diminished excretion, deficient urea elimination, or fatty, granular, or waxy casts. The presence of these abnormal constituents determines the necessity of interrupting pregnancy. The writer emphasizes the fact that catheterized urine should be obtained for accurate diagnosis. The most important pre-eclamptic signal is the diminution in the excretion of urea. A fall to 1.5 per cent. is always dangerous. This symptom positively denotes kidney inadequacy. When the pre-eclamptic state is diagnosed we should (1) reduce the amount of nitrogenous food; (2) limit the production and absorption of toxic materials in the intestines and the tissues of the body and assist their elimination by the bowel, liver, kidneys, skin, and lungs; (3) if necessary remove the source of fetal metabolism and irritation by emptying the uterus.

Constipation as a Factor in Eclampsia. Aspell¹ believes that there must be some cause present in the eclamptic subject that is not present in all cases where kidney disturbance exists. Perhaps the form of convulsion present may help us come near to the cause. Mild convulsions of short duration do not disturb the system very much, but when they are severe and prolonged the venules of the face become enormously distended and the convulsions increase in intensity, merging into the status epilepticus. The pulse is the predominating factor in suspected subjects. The varying degrees of pulse tension places the observing obstetrician on his guard. A case is cited in which the pulse tension kept up while there was long-standing foreign matter in the intestines. She was on strong catharsis for twelve days, and up to that day passed a quantity of dark, scybalous masses. So no one knows until he investigates how much foreign material the colon can store away, nor the damage accruing from its absorption.

Puerperal Eclampsia in the Light of Thyroid Inadequacy and its Treatment by Thyroid Extract. H. O. Nicholson² presents a theory as to its cause, which is that its occurrence is intimately connected with inadequacy of the maternal thyroid system. He says it is certain that in cases of genuine puerperal eclampsia the kidneys and liver commonly suffer no permanent damage, and all recent investigations point to the conclusion that the convulsions are due to an acute toxic poisoning. If there is still uncertainty in some minds as to whether a toxæmia accompanies normal pregnancy, there is little if any doubt that some toxic condition of the blood is the immediate cause of the eclampsia. When a pregnant woman threatens to become eclamptic the clinical points of chief significance are: 1. Certain changes in the character of the pulse, the condition of the arterial walls, and the blood pressure. 2. Marked diminution in the quantity of urine secreted in the twenty-four hours. 3. Diminished quantity of urea in the urine. The diminished amount of urea he regards as a most striking and important matter. It strongly suggests that the metabolism of nitrogenous substances has not been properly carried out. At the present time, when considering questions of metabolism, one thinks naturally of the thyroid gland, for there is now little doubt that the active thyroid supplies a secretion which is essential to normal metabolism. In the additional metabolic processes incident to pregnancy we would expect an increase in thyroid activity. That the thyroid does undergo enlargement at this time is a well-established fact; hence it seems not improbable that the occurrence of eclampsia may be intimately connected with inadequacy of the maternal thyroid system. If the thyroid secretion

¹ American Journal of Obstetrics, April, 1903.

² British Medical Journal, October 11, 1902.

be deficient, either by too small a quantity or decreased activity, nitrogenous metabolism will not go on normally, and certain characteristic symptoms will arise. The symptoms of advanced *myxœdema* and puerperal eclampsia correspond in many respects. The circulatory changes are the same, and there is a diminished amount of urine and diminished urea secretion in both conditions. The peculiar solid œdema of myxœdema may be present in some cases of eclampsia, and the albuminuria which almost always coexists with puerperal convulsions is also at times present in the myxœdematous state. Chronic myxœdema may sometimes terminate in convulsions and coma. In pregnancy, however, it is quite likely that the features of myxœdema may become modified into those of eclampsia through the participation of the parathyroids. Recent experimental work supports the view that these glands are functionally associated with the thyroids in some manner, and there is some evidence that they destroy toxic products of metabolism. Cases of pregnancy associated with myxœdema or with goitre are reported, and in some of them all the characteristic pre-eclamptic symptoms were present to a marked degree.

In a general way his conception is that in some pregnant women—for reasons which are at present obscure—the supply of iodothyryn in the tissues become gradually or suddenly insufficient for the needs of normal metabolism. Coincidentally certain toxic substances (intermediate or imperfectly converted products of nitrogenous metabolism) find their way into the circulation. These toxins, by their special property of contracting the bloodvessels, eventually lead to the arrest of the renal secretion. With the suppression of urine convulsions occur, and these do not seem to differ essentially from the fits of ordinary uræmia. Supposing the above hypothesis to be true, two main principles of treatment are indicated. The first would aim at the readjustment of the metabolic processes, best applicable in the pre-eclamptic stages. This indication might be fulfilled by the administration of thyroid extract in doses of 10 to 20 gr. daily until the symptoms of “thyroidism” appear, continuing after with a dose large enough to prevent the return of pre-eclamptic symptoms. When the *thyroid treatment* is begun the nitrogenous food should be greatly diminished for a few days; later it may be resumed. None but a thoroughly reliable and active preparation of thyroid gland should be used.

The other obvious indication is to re-establish the secretion of urine. The writer believes the cause of the renal arrest is the action of the toxins on the bloodvessels. The toxins cause contraction of the arteries generally, but the renal vessels in particular. This becomes so extreme that the flow of blood through the kidney is prohibited and the secretion of urine is entirely abolished. The indication here is to relax the spasm

of the renal arteries. Thyroid extract possesses a specific action in enlarging the calibre of the vessels, and when given to an eclamptic patient in doses sufficient to produce "thyroidism" the renal secretion soon becomes re-established. Morphine is of undoubted value in eclampsia, and he believes its value is due to its action of fully dilating the vessels, when given in large hypodermic doses, thus re-establishing diuresis. One-half or even a grain must be used. Smaller doses do not produce sufficient vasodilatation, and may cause alarming symptoms. Excellent results also follow saline infusions. The rationale of their treatment is the same as that of the thyroid extract and morphine treatments, relaxation of the renal vessels resulting in diuresis. After the administration of thyroid extract the amount of nitrogen excretion in the urine is increased, chiefly in the form of urea. Thyroid extract is a powerful diuretic. The increased quantity of urine secreted may possibly be related to the simultaneous rise in the urea secretion, as urea is possessed of remarkable diuretic properties. Thyroid extract may be used by mouth or hypodermically in all cases of eclampsia, but when convulsions are frequent or severe at least one large dose of morphine should be given. Saline infusions may also be used to hasten the re-establishment of diuresis. In cases where the patient is rapidly dying from coma with a rapidly rising temperature, treatment by the cold or tepid bath seems to offer the best chance for recovery. Do not use morphine in the comatose type.

Pathology of Eclampsia. G. Baughman¹ discusses the more recent pathological findings in puerperal eclampsia. Not seldom one finds cases where there are no changes in the brain, cord, chest, or abdomen. Where pathological changes are found we find hyperæmia of the brain and membranes, accompanied with serous infiltration, apoplexy of the brain and membranes, or meningitis. In other cases we find anæmia of the brain, and the cause of death is found in œdema of the lungs. The kidneys should be especially noted, for they are often hyperæmic or in the first or second stage of nephritis; the third, atrophic stage, is seldom met with. Since 1895 numerous papers have been written by skilled observers who have been making special studies of eclampsia for years, and a positive pathology has been established. The kidneys are almost always diseased. In 73 dissections following eclampsia, Schmorl found kidney changes in 72. In 368 post-mortems Prutz found only 7 sound kidneys. Glockner found the kidneys diseased in 25 out of 26 cases examined. These changes are usually not inflammatory, but degenerative, and are found in the epithelium of the tubules. The chief degenerative changes are cloudy swelling, fatty

¹ American Gynecologist, November, 1902.

change, and local necrosis. Fibrous and hyaline thrombi are sometimes found in the glomeruli, but glomerulonephritis is rare.

The changes in the liver rank second only to those of the kidney. Glockner found 20 characteristic changes in 26 post-mortems; Schmorl, 71 in 73. Anatomical liver changes are enlargement, numerous superficial yellow spots and stripes, and large, red patches sometimes irregularly shaped. These spots present a characteristic appearance under the microscope. In the centre are necrotic liver epithelium, and red blood cells more or less degenerated; in the capillaries and small portal vessels are thrombi. Anæmic necroses of the liver epithelium are also found. Of 73 post-mortems in eclampsia by Schmorl, thrombosis of the lungs was present in 66. Lubarsch says that in the brain and its membranes are found minute hemorrhages and softening. Winkler found these six times in 7 post-mortems, in the membranes or in the brain. Schmorl observed minute hemorrhages in the brain or its membranes sixty-five times in 73 dissections. The same investigator found minute hemorrhages accompanied by necrosis of cells in the heart forty-two times out of 73 observations. Hemorrhages are frequent in the suprarenals, pancreas, and gastrointestinal tract. We find not only the thrombi in the capillaries, but occasionally emboli of cells torn off from some distant organ or structure, probably as the result of the violent spasms. I have seen a giant placenta cell embolus in the liver. The writer concludes, then, that there are very characteristic pathological findings in eclampsia. The kidneys practically always show evidences of degeneration; the liver is studded with punctate hemorrhages, thrombi, and degenerated epithelium, and the brain and its membranes show punctate hemorrhages with necrosis of the epithelium. Similar lesions are found in the heart; not so frequently in the suprarenals, pancreas, and gastrointestinal tract. Several photomicrographs are shown, showing the changes mentioned in liver, kidneys, and uterus; they were taken from a patient who had had headache and drowsiness and whose urine was loaded with albumin and casts, but who never had had an eclamptic attack. She died the day following a Cæsarean section.

Pneumococcus Meningitis Simulating Puerperal Eclampsia.

Wilson¹ reports a case admitted to the Birmingham Hospital in a comatose condition with pulse of 140, respiration 38, temperature 100.8° F. She died without recovering consciousness. Examination revealed she was a multipara, between six and seven months pregnant. There was no œdema of the lungs, and the heart was normal. The urine, obtained by catheter, was acid in reaction; specific gravity 1032, and contained a large quantity of albumin and 1.5 per cent. sugar.

¹ Transactions of the Obstetrical Society of London, 1902, part i. p. 5.

No casts or blood corpuscles were present. Her history was that she had borne seven children, and that five days before admission she had complained of severe headache and malaise. The day previous to admission she was found unconscious in her bedroom. She passed through a succession of convulsions, in which the face was drawn to the right side. Feces and urine were voided during the attack. The convulsions continued incessantly until she was put under the influence of chloroform. The urine was highly albuminous, and the physician called in to see the case diagnosed it puerperal eclampsia. On post-mortem examination death was found to be due to a purulent meningitis caused by the pneumococcus.

Treatment of Eclampsia. In regard to *treatment* there is almost as great a diversity of opinion as there is concerning the etiology. Stroganoff,¹ whose results in treatment certainly merit close study, administers morphine and chloral hydrate. The essential point in using these drugs is that they must be given in large doses for one or two days after the first attack, the size of the dose depending upon the severity of the attacks. Morphine, he claims, lowers the reflex excitability, while chloral acts as an antispasmodic. Chloroform is only used when the paroxysms are very frequent, and then only until the morphine acts. Artificial labor should be induced only with a live child and dying mother. Saline solution by the rectum, oxygen for inhalation, and stimulants are adjuvants to his treatment. Abraham² sums up treatment in one word—"elimination." The quickest results may be obtained by blood-letting, followed by saline infusion or transfusion. In anæmic cases do not bleed, but use the saline injection. The results are that the patient's general condition improves: the cyanosis, rigidity, and muscular twitching ceases; the pulse loses its tenseness, and the coma, however previously deep, will be slowly and surely lifted.

Maygrier³ also recommends bleeding to the extent of 300–500 grammes (10–16 ℥). He follows this by the subcutaneous injection of the following solution, using an amount equal to the blood withdrawn:

Sodium chloride	.	.	.	.	.	.	.	.	.	3 ij.
Distilled water	.	.	.	.	.	.	.	.	.	℥ xxxij.

A full enema followed by a purgative enema is given; 150–200 grammes (5–6 ℥) of milk are then given. If the patient is unable to swallow practise gavage. If the teeth are set, introduce the tube through the patient's nose. Small quantities of chloroform on a handkerchief during the access of the attack will suffice. Chloral hydrate, 4 grammes

¹ Russky Vrach, July 27, 1902.

² American Journal of Obstetrics, January, 1903.

³ Revue Médicale, November 12, 1902.

(3j) in 200 grammes (5vj) of milk may be used as an enema. He advises great caution in employment of morphine. Without grave accidents pregnancy must not be interrupted, but when labor begins expectant treatment must be abandoned, and delivery must be performed promptly by forceps, version, or extraction, according to the case.

Helme¹ says, looking upon the association with the pregnant state as a vital factor in the production of the eclamptic fit, that he considers it best to terminate the pregnancy, but not by too heroic means and regardless of injury to the mother's soft parts. He uses chloroform and morphine to control the fits, and stimulates all the emunctories. For rapidity and simplicity in emptying the uterus he recommends Bossi's dilator. While it must be used with care, it can be employed with confidence and safety.

APOMORPHINE IN PUERPERAL CONVULSIONS. Apomorphine has been used for its diaphoretic effect in puerperal convulsions by T. N. Kitchens,² who reports his success. The writer says that having observed that apomorphine is not only a "typical central emetic," but also a powerful diaphoretic, almost the equal of pilocarpine, without its tendency to produce pulmonary oedema, he resolved to try it. Up to the present time he has had no occasion to use it in cases before labor, but on account of its wonderful effect in post-partum cases he would have no hesitancy in using it at any stage of labor. It is only commended by him as an addition to the usual treatment by salines, veratrum, etc. To get the diaphoretic effect it is given in doses of one-twentieth of a grain, hypodermically. Larger doses will produce emesis. If necessary the dose should be repeated in one-half hour. He does not report the number of cases upon which he has used it, but says as yet he has not had to repeat the dose nor has he obtained the emetic action. All the cases occurred in the hands of midwives and all recovered.

CHLORAL HYDRATE IN ECLAMPSIA. Commandeur³ protests against the irrational manner in which chloral is so often given in eclamptic treatment. Most practitioners administer it by rectum, but Commandeur believes that this method is often ineffective because the drug is not absorbed by the rectal mucosa. Some patients are unable to retain the injection, while others soon manifest such an intolerance that its administration has to be discontinued. For these reasons he prefers giving it by the mouth, but in doing so follows two important precepts, originally formulated by Foucher. In order to lessen irritability of the stomach it should be washed out before administering the

¹ British Medical Journal, April 11, 1903.

² Therapeutic Gazette, August 15, 1902.

³ Semaine Médicale, October 1, 1902.

drug. The chloral should then be dissolved in from one hundred to one hundred and fifty times its amount of water. If given in this manner it is well tolerated and fully absorbed. It can also be given for considerable lengths of time. The writer gave 14 grammes (210 grs.) within forty hours by this method. He also reports that four cases which had been treated by this method went on to a full-term pregnancy in a manner he describes as exceptional.

SPINAL INJECTION OF TROPACOCAINE IN ECLAMPSIA. Kamann¹ reports his treatment and results in a primipara with eclampsia. She was twenty years of age, and was brought into the hospital in the morning in a state of deep coma. She had had a perfectly normal pregnancy throughout until the previous evening, when she was seized with convulsions, at first every half-hour, but later less frequently. She had had seventeen convulsions before admission, and had been unconscious since the first. She was given 15 grains of chloral per rectum, and then upon examination it was found she was at full term and labor had begun. The cervix was dilated, the membranes were protruding, and the fetal head had entered the true pelvis. Shortly after this she had a typical eclamptic attack, which was controlled by chloroform inhalation. The pulse rose to 160 beats per minute, the respirations to 50, and the temperature to 101.5° F. The writer was advised by Winckel, who had had success with Schwarz's spinal injections of tropacocaine in difficult labors and uterine operations, to employ this treatment in this case. Therefore, 1 c.c. (15 m.) of a 5 per cent. solution of tropacocaine was aseptically injected between the fourth and fifth dorsal vertebrae into the dural sac. No fit occurred, and she slept quietly for about three hours, when she awoke apparently well, having been in deep coma from the time of her entrance until the injection.

The temperature dropped to normal and the pulse to 100. As the labor was progressing slowly a second dose of chloral was given during the night. In the morning a second injection of tropacocaine was made, because the patient was restless and had severe and frequent pains. The pains were not diminished in force, though scarcely felt, and she gave birth to a healthy female child. The analgesia lasted thirteen hours after birth, during which time she was comfortable. The second day after she complained of pains in the head, back, and body. The site of the injection was swollen, oedematous, and tender, but not inflamed. She had retention, and twenty-six ounces of urine were withdrawn by catheter. This was highly albuminous. The third day she was apathetic and had slight jaundice. Temperature was 102.4° F., and pulse 138. The fourth day there was slight cough, but no expect-

¹ Münchener med. Wochenschrift, May 20, 1902.

toration, and some abdominal tenderness. The uterus, however, was not tender. Later hyperæsthesia of the entire skin developed. The cough was still constant, but there was no expectoration. An examination revealed dullness over the left scapular region with bronchial breathing and coarse râles. The temperature rose to 105° F., and she became drowsy and passed into deep coma, in which she died four and one-half days after labor. The writer considers, in a discussion of the condition, that all suspicion that it was in any way caused by the tropacocaine should be set aside. The autopsy revealed a general icterus with multiple foci of necrosis in the liver, acute parenchymatous nephritis, croupous pneumonia in the upper lobe of the left lung, acute œdema of the right lung, multiple hemorrhages of endocardium, and spinal dura mater.

This review of eclampsia serves to impress the fact that selection of treatment in many details must depend upon the type of the disease. For example, in a case clearly dependent upon kidney disease and insufficiency, morphine or very large amounts of saline transfusion will not be tolerated and are not indicated, as they are in cases associated with liver toxæmia. Again, an anæmic, impoverished patient with a weak heart should not receive heroic doses of veratrum and the depressant action of large amounts of chloral and chloroform. So with blood-letting, hot packs, and the hot bath, while useful in many cases, they may in others prove too depressing when persistently employed. Free catharsis is, perhaps, the most generally applicable treatment not likely to become too depressant, especially when fortified with the moderate use of saline infusion or intestinal injection. The pressure theory is the only one that demands the most rapid delivery, such as Cæsarean section, and since the toxæmic theory of eclampsia has become so widespread the greater importance of elimination followed by slower methods of delivery has steadily gained ground. There are, of course, some cases so overwhelmed by toxins that all measures short of rapid delivery seem of no avail. Bossi's dilator has been offered to meet these cases, and is, when judiciously used, a method of rapid delivery that offers great promise. Yet these overwhelmed cases are the ones that often die no matter what treatment is employed, and they serve to emphasize the necessity for attention to the pregnant woman such as can and will prevent their occurrence.

For puerperal eclampsia of renal origin renal decapsulation has been proposed and practised in one case by Edebohls.¹ His results of this operation, in cases of chronic Bright's disease, induced him to perform bilateral decapsulation for eclampsia two days after forced delivery, the convulsions having persisted after delivery and ceased after the opera-

¹ Transactions of the American Gynecological Society, 1903.

tion. This plan of attacking eclampsia is a very heroic one, applicable only to cases unmistakably due to nephritis, and is at this time wholly experimental. The future must decide how harmful such treatment will be. It seems to me that the well-known dangers of surgical interference upon a toxic patient, the frequent association of grave hepatic toxæmia, the condition of the circulation, of the heart and nervous system, all point to the danger and the limitation of such a treatment. The high mortality of Cesarean section, of accouchement forcé, even of craniotomy for eclampsia, bespeak the grave dangers of surgical interference. Whether or not the prompt relief to kidney inadequacy as claimed by Edebohls¹ immediately enables the kidneys to quickly eliminate accumulated toxins is yet to be determined. The trend of modern practice is to rely upon the other emunctories, and to lessen the importance of early and radical surgical interference.

OBSTETRIC SURGERY.

Prevention of Infection. The technique of modern obstetrics for the prevention of puerperal infection has approached more and more to that of abdominal surgery. Sterilization of instruments and dressings by means of antiseptic solutions is largely discarded. Steam and boiling water have supplanted the chemical disinfection. The routine ante-partum and post-partum antiseptic douches have been discarded even for operative cases, and "meddlesome midwifery" is not so frequently observed. The dangers of repeated vaginal examinations are appreciated, and the possibility of infection is more thoroughly appreciated by the present generation of physicians by reason of their better teaching.

While it is true that frequent examinations add to the risk of infection, this risk can be minimized by always wearing a surgically clean rubber glove and by thoroughly cleansing the entrance into the vagina by means of pledgets of cotton and bichloride solution (1 : 2000) prior to the introduction of the examining finger. Three years' experience with rubber gloves in obstetric practice has convinced me of their practical value. I know of no detail in the modern technique of an aseptic delivery more valuable, and especially to the general practitioner who attends labor cases. The gloves should be boiled before examining a case and kept immersed in bichloride solution (1 : 1000) between examinations.

Vaginal Use of Elastic Bags. Voigt² gives the details of his use of elastic bags in the vagina during labor. Among 12,455 labors in the Dresden clinic he used it in 510 cases.

¹ Medical Record, March 28, 1903.

² Archiv für Gynäk., 1902, Band lxxi., Heft 1.

Antiseptic precautions were always observed: the vagina was douched with bichloride of mercury, and the bag washed first with soap and water, then immersed in bichloride before being inserted into the vagina. Three indications were observed in its use: 1. For retaining the amniotic fluid when premature rupture of the membranes occurs or is threatened. 2. Dilatation of the soft parts. 3. Stimulation of uterine contraction. The latter indication, however, the author believes is questionable and ordinarily does not advise it. In cases where there is a slightly flattened pelvis and you have determined upon version and wish to retain the waters as long as possible the third indication is decidedly advantageous, although generally he does not believe that pelvic contraction is an indication for this procedure. In a pelvis contracted to such a degree that delivery by the normal route was impossible, this method would be positively harmful. In cases of eclampsia it is of value in stretching the soft parts if labor has advanced so as to come to delivery in a short time. In placenta prævia it is not as effective as the tampon. In some slow labors which must be hastened in the interest of the child it is of use to stimulate the uterine contractions and dilate the pelvic soft parts. In cases where there is much cicatricial tissue present this method is ineffective. It should not be used when there are cicatricial contractions nor until pains have begun, and the cervix should be dilated to admit one or two fingers. The bag should not be filled so full that it will give the patient discomfort or cause sleeplessness between pains. This method the author claims prevents exhaustion, thus hastening convalescence, and by shortening labor increases the child's chances.

Bossi's Dilator. Bossi's dilator as an instrument for quick, safe, aseptic, and bloodless dilatation of the cervix has been almost universally commended by those operators who have used it. Some exceptions have been taken to its use, but they seem to have arisen more from a faulty understanding of the method of application than from any non-adaptability of the instrument itself. Many foreign clinicians have used it in a sufficient number of cases to thoroughly test its worth and continue to indorse it.

Wagner¹ reports three cases in which this instrument was used for rapid dilatation of the cervix: (1) A multipara, who had previously had a colpotomy performed, was weak, had poor pains, and was nervous and very slow in dilating. She was etherized, and in thirty minutes the cervix was completely dilated. She was then delivered by Tarnier's forceps; mother and child did well. (2) A multipara, with slightly contracted pelvis. She had had transverse pres-

¹ Centralblatt für Gynäk., 1902, No. 47.

entation; all the children were large and perished soon after labor. It was determined best to induce labor before the child became too large. In sixty minutes the cervix was completely dilated without rupturing the membranes. After waiting five minutes the membranes were ruptured, version performed, and the child delivered. It was born with the arms extended above the head and caused much difficulty. It was asphyxiated and could not be revived. There was free hemorrhage, and it was found to be due to a laceration of the cervix with arterial bleeding. This was thought to have been caused by the large head of the child. It was closed by suture, and she made a good recovery. (3) A multipara; pregnant five months; had had profuse hemorrhage for three weeks; placenta prævia was diagnosed after dilating the cervix with Bossi's dilator sufficient to enter the index finger. The cervix and vagina were tamponed, but as a sharp rise in temperature followed, the dilator was again used on the following day and a macerated child delivered by version. The placenta was found detached from the anterior wall of the uterus. The author was much pleased with the working of the instrument in these cases.

Bischoff¹ reports the use of Bossi's dilator in three cases of eclampsia and two of contracted pelvis. One case of eclampsia also had a contracted pelvis. In his hands it was found that laceration of the cervix of a mild degree followed the use of the dilator, and it is his opinion that in cases which are not serious and where haste is not urgent the cervix can be dilated with less damage by using the bougie and elastic bags. However, he believes in hospital cases where antiseptic precautions are carried out and any operation can be done promptly it has a field and should be used.

O. Kaiser² presents a modification of the instrument. He believes that the method has undoubted excellence, but does not recommend it in all cases of artificial production of labor, as he believes for some cases it is too great a departure from nature's methods and that the metreurynter still has its place. He reports a case of placenta prævia in which he was unable to use the dilator on account of a former cervical tear threatening to become deeper. Eight hours afterward spontaneous delivery occurred through an obliterated cervix.

Langhoff³ used Bossi's dilator in a case of eclampsia with good results.

Simpson⁴ reported a case of eclampsia with highly albuminous urine and violent convulsions. The cervix barely admitted one finger. Treatment was applied to elimination and control of the nervous system.

¹ Centralblatt für Gynäk., 1902, No. 47.

² Ibid., No. 41.

³ Ibid., No. 47.

⁴ British Medical Journal, November 29, 1902.

By Bossi's dilator the cervix was completely dilated in twenty minutes. The child was delivered by forceps, but did not live. The patient made a slow but complete recovery.

Keller¹ has used this instrument in fifteen cases. He believes in the advantages of the instrument, and also that there is danger of deep cervical lacerations in unskilled hands.

Lederer² reports ten cases in which dilatation was effected in from seven to twenty minutes. He finds that the instrument can be used though the cervix be completely closed, and that perfect asepsis and rapid delivery can be secured.

H. McNaughton Jones³ reported a case of albuminuria at the seventh month in a fibromatous uterus which he successfully delivered by this method of rapid dilatation of the cervix. The patient had had a somewhat severe hemorrhage early in the seventh month. She was also suffering from an albuminuria which was so severe that her urine became almost solid on boiling. There were no attendant symptoms with this. The hemorrhage recurred, and was accompanied by attacks of partial syncope and sickness. As there had been an absence of fetal movements for several days delivery was determined upon. The patient was antiseptically prepared and vagina douched. The body of the uterus was found to be fibromatous. In twenty minutes the cervix was dilated to six and one-half centimetres without any laceration or rupture of the membranes. The presentation was that of an arm with the head in the left iliac fossa. The membranes were ruptured, because the child could not be moved. After rupture of the membranes, in attempting to get the head into position, the arm and a loop of the cord came down. Version was very difficult, as it was impossible to insert the hand into the uterus. This was accomplished, however, by pushing back the arm and head sufficiently to catch hold of a foot. The after-coming head stuck, and was delivered by using a forceps blade as a vectis. The placenta was delivered shortly after. The foetus was discolored and decomposition with attendant desquamation had set in. The uterus was explored with ovum forceps and some placental debris removed.

The uterus was douched with formalin. Two slight lacerations, caused by delivery of head, were repaired with cumol gut, the vagina loosely packed with iodoform gauze, and the patient did well. In the discussion it was said that Prof. Leopold, of Dresden, had used the instrument with success in eclampsia and contracted pelves, and that it was believed that it had rendered good service in the direction of rapid delivery.

¹ Archiv für Gyn., Band lxxvii., Heft 3.

² Ibid.

³ British Gynecological Journal, August, 1902.

MECHANISM AND MANAGEMENT OF ABNORMAL PRESENTATIONS AND POSITIONS.

Mechanism of Labor in Posterior Positions of Vertex Presentations. These positions are not only most complicated and varying, but, according to Stark,¹ are likewise little considered in our obstetric textbooks. The variations in the form of mechanism are dependent upon the size of the pelvis and the size and degree of flexion of the child's head. In discussing them the writer only considers the most common posterior position, R. O. P. The right oblique diameter is trisected by two imaginary lines, one passing from the right side of the promontory of the sacrum to the right iliopectineal eminence, and the other from the left sacroiliac synchondrosis to the pubes, parallel to the first line, thus dividing the right oblique diameter into unequal portions, the posterior of which is the narrower, showing an average measurement in a number of bony pelvises of three and one-half inches, the anterior being sufficiently ample to accommodate any of the lateral diameters of the head. The second anatomical point noted is the distance from the termination of the right oblique diameter at the pectineal eminence to its intersection with the short line subtending the promontory of the sacrum and the ilium. This measurement was found in a number of cases to be four inches. This line the writer calls "the diameter of favorable engagement," because of the easier and more rapid termination of cases so engaging. There are four forms of mechanism encountered at the brim :

1. The entrance of the occiput in the diameter of favorable engagement.
2. Arrest of the occiput, descent of the sinciput, and release of the occiput with re-establishment of flexion.
3. Arrest of the occiput, descent of the sinciput, and conversion into a face presentation.
4. Arrest of the occiput, descent of the sinciput, impaction and arrest of labor.

The first is the most frequent and most favorable position. It is recognized by finding the small fontanelle directly in the axis of the pelvis. In No. 2 the biparietal diameter of three and three-fourths inches is arrested in the small space measuring three and one-half inches, and the expulsive power is extended upon the sinciput. The large fontanelle dips until the biparietal diameter is released from the small space when the occiput descends. The sinciput meets with resistance from the left anterolateral wall of the pelvis; flexion is re-establish-

¹ American Journal of Obstetrics, January, 1903.

lished. This form is marked by a tardy and irregular first stage of labor. In No. 3 the occiput is not readily released, either because of its firm impaction or because the expulsive power upon the sinciput is so predominant that it is continuous until complete extension takes place. This may also be caused by the absence of sufficient resistance to bring about flexion. It is also possible that it is met with in some instances in which the primary causes productive of face presentations are present, but to an insufficient degree becoming more effective as the head engages in the pelvis. In No. 4 we have to deal with large heads engaging in comparatively small pelves. In this case the occiput is firmly wedged in the small space and the sinciput descends until the occipitomenal diameter or some diameter short of this is engaged. We then have a five to a five and one-quarter inch diameter occupying the oblique diameter of the pelvis measuring five inches or less, and an arrest of labor is the result. When the occiput reaches the floor it rotates anteriorly or posteriorly. The requisites for anterior rotation are flexion, good pains, and a relatively rigid pelvic floor. If the head be in extension the sinciput will rotate anteriorly. Good pains and a relatively rigid pelvic floor are essential to establish the proper balance between the forces of expulsion and resistance. Penrose mentions in this connection the conversion of an occipitoposterior into a mentoanterior. In these cases the occiput reaches the pelvic floor, becomes caught on some abnormal projecting point or surface, so that anterior or posterior rotation becomes impossible. The chin leaves the breast of the child and sinks behind the pubis, and ultimately terminates as a mentoanterior face presentation. In an occipitoanterior position, when the occiput gets locked beneath the arch of the pubes, the chin, as the only part free to move, and under the expelling force, leaves the breast and the head extends. This is what we have occurring in these very rare cases. The occiput becomes arrested; it can advance no farther; it can rotate neither forward nor backward, and, finally, the chin, as the only part of the head free to move, leaves the breast of the child. The head extends and the labor terminates as a face presentation.

The Management of Occipitoposterior Positions of the Presenting Head. This subject was prize question No. 22 in the *New York Medical Journal's* series of monthly prize essays. The following treatment as outlined by W. J. Cavanaugh, April 11, 1903, was awarded first place: The management of occipitoposterior positions should be for the most part prophylactic, as the majority of them require no treatment beyond a careful watching by the attending physician, since the occiput, though originally posterior, when it reaches the pelvic floor rotates forward and assumes an anterior position. Rotation of the

frontal end forward, however, occurs when there is failure of proper flexion. Therefore, frequent vaginal examinations should be made in order to detect any failure of proper flexion, for successful management depends upon the time when the diagnosis of failure of proper flexion has been made and the manner in which the failure is remedied. If the case be seen before the membranes have ruptured, it is frequently possible to effect a preliminary rotation of the head by placing the woman in the knee-chest position and having her remain so as long as her strength will permit, or until a vaginal examination without alteration of her position shows that rotation has taken place. Should the occiput after once rotating anterior show any tendency to again become posterior, rupture the membranes in order to hasten the engagement of the head while the occiput is still anterior. Should postural treatment fail, the case should be left to nature, remembering that even after rupture of the membranes no treatment is necessary while good flexion is present. The posterior fontanelle should be plainly felt during the progress of the case, while the anterior fontanelle is felt with difficulty if at all on account of its being crowded against the symphysis pubis. If at any time the anterior fontanelle is found becoming more easy of access while the posterior remains stationary, the physician realizes at once that extension of the head is taking place and proper interference now is of the greatest value.

The fingers of the right hand, if the occiput be to the mother's right, should be applied to the frontal end of the head, and during a pain a firm resistance, not pressure, should be made to prevent any further descent and allowing the actual flexion of the head to take place by the pressure exerted upon the occipital end by the uterine contractions. Should the case be so far advanced that simple pressure is no longer practicable the vectis, applied over the occiput with simple pressure to the frontal head, may be tried, though it is not often enough successful. Should failure result: 1. Etherize to full anæsthesia, pass the hand into the vagina, grasp the head, and steadily and gently push it up and out of the pelvis above the superior strait, then flex it and rotate the occiput forward, holding it so until the pains aided by pressure of the other hand upon the abdomen push it down again into the pelvis in its occipitoanterior position. The forceps may be required to complete the delivery. 2. Delivery by the application of the forceps reversed, with the convexity of the pelvic curve toward the pubes instead of toward the hollow of the sacrum, the descent, flexion, and rotation of the head being accomplished by this method. The blades should be introduced so that the cephalic curve passes over the ear of the child, the tips resting upon the occiput. Traction should be gently made with one hand, while the movement of the head is felt by the other hand. The

occiput is naturally drawn down; the head, tilting on its attachment to the spinal column, yields to the leverage, and the frontal end being forced up flexion of the head is at once established and the occiput becomes the lowest part. The ether should then be stopped, the forceps removed, and the case left to nature. Rotation of the occiput soon takes place, and with less laceration to the vagina and perineum than when done by instruments. However, should some emergency render immediate delivery necessary, the forceps should be removed after the head has been flexed and reapplied in the usual way, favoring forward rotation of the head during traction. Should all efforts at restoring normal flexion fail, and the descent of the head is arrested owing to a want of adaptability between fetal and pelvic diameters, further delay may be avoided by completely extending the head, thus converting a brow presentation into the most favorable variety of face presentation —*i. e.*, that in which the chin presents under the pubic arch, and extracting with forceps. Should the posterior occiput be arrested high at the pelvic brim, version is the preferable operation unless uterine conditions distinctly contraindicate it.

Management of Face and Forehead Presentations by Manual Conversions. The Baudelocque manipulations aim only to flex the fetal head while the Schatz procedure attempts to change the fetal body from its lordotic position to the natural kyphotic one. The combined methods as advanced by W. Thom¹ effects by internal flexion of the head, together with external displacement of the body, the complete correction of the malposition of the head and body, which is so necessary as a result of the correction in a majority of the cases of persistent posterior vertex presentation. The combined method of manipulation is described as follows: One hand operates through the vagina, the other through the abdominal wall. Preferably the hand corresponding to the back of the foetus is introduced into the vagina, and between the labor pains attempts to flex the chin upon the body by pressing upward upon the prominences as they present themselves. Thus the face, canine fossæ, and the sutures of the fontanelles of the skull, more especially the larger one. Finally, the occiput is pushed up and an effort made to fix it firmly in the pelvis. At the same time the other hand is exerting an upward and outward pressure upon the breast of the foetus through the abdominal wall. When the foetus has been thus straightened an assistant maintains the pressure upon the fetal chest, relieving the operator's external hand. The operator now grasps the breech with his external hand and pushes it toward the face of the foetus; at the same time the hand in the vagina grasps the occiput and

¹ Sammlung klinischer Vorträge, July, 1902.

draws the head lower into the pelvic inlet until the posterior fontanelle will remain lower than the anterior. Should the operator have a skilled assistant the management of the breech may be left to him. Should this effect a satisfactory reduction of the lordotic posture, the woman is placed upon that side corresponding to the back of the foetus, the fetal chest all the while being supported by outward and upward pressure of the external hand, especially during the succeeding pains. To insure success after manipulation, if the membranes are still intact, rupture them. The chief aim of the combined method is the complete reduction of the lordotic position ; it should be performed under anaesthesia unless contraindicated. The mother should not be left alone by the obstetrician after the correction has been completed. Prolonged face presentations are unfavorable to the child and justify any interference harmless to the mother. Therefore, should the progress of the birth be delayed at the end of the first or during the second stage of labor, make an effort to change the position into a posterior occipital one, according to the combined method under ether unless contraindicated. If the uterus be firmly contracted upon the foetus, or a marked cervical contraction or an unusual dilatation of the lower segment of the uterus be present, and a rapid delivery is necessary, then the first Baudelocque, or, better, Opitz's, manipulations under ether may be tried. The head should then be turned, and, following that, the body position corrected. Following these manipulations it is best to use forceps to deliver. Contraindications to the use of the combined method in forehead and face presentations are prolapse of funis and extremities, low implantation of placenta, extreme dilatation of the lower segment of the uterus, extremely contracted pelvis, and when the mother's life is in imminent danger.

If the attempt at correction in a normal pelvis is unsuccessful, and no immediate danger is threatened, treat expectantly, and note whether the pains improve and labor is progressing. If there is no improvement perform internal version. If there is a threatened dilatation of the lower uterine segment and a careful trial of the first Baudelocque or Opitz's manipulation is unsuccessful, then resort to perforation, having excluded Cæsarean section. If the head be immovably fixed in the pelvis, do not attempt to correct, even though the chin be directed backward. The chin almost invariably rotates forward and the forceps can be used.

Should the chin persist posterior and interference is demanded, make a careful attempt to bring it forward according to the method of La-chapelle or Volland by downward external pressure upon the occiput, forcing it into the pelvis. If unsuccessful perform craniotomy. In forehead presentations always attempt to convert them by the combined

method into posterior occipital presentations. If conversion fails do internal version.

If there is not the requisite mobility of the foetus for the successful employment of the combined method and labor is protracted, then under deep anæsthesia make careful attempts, according to the methods of Baudelocque, Opitz, or Hildebrandt, to secure posterior or anterior occipital positions. If unsuccessful wait as long as justifiable and use forceps when indicated. If the foetus dies or the mother's life is threatened perform craniotomy, having first excluded Cesarean section.

Rest and Strychnine in Persistent Mentoposterior and Occipitoposterior Positions. The treatment employed by J. Clifton Edgar in two abnormal cases is interesting. One was a persistent right mentoposterior in a macerated foetus, the other a persistent right occipitoposterior in a premature foetus. A secondary inertia in these cases was treated experimentally with strychnine given to the physiological degree, with the result of anterior rotation and spontaneous delivery. These cases were reported before the New York Obstetrical Society. Dr. Jewett remarked their interest as showing the possibilities of expectant treatment with a normal head.

Treatment of the After-coming Head. Many methods have been proposed for the delivery of the after-coming head, but Steffek¹ believes that statistics show there is need for an improvement, especially as regards the mortality of the child. Injuries and asphyxiation are not uncommon, and may be traced to the manipulations preceding the extraction of the head. He believes that it is unnecessary to artificially bring the head into the pelvis, for, it being compressible, will best assume of itself the shape best adapted to its passage through the pelvic outlet; also, that the introduction of the operator's finger into the child's mouth induces premature respirations. The method which he advocates he has used with good results in over thirty cases. The head is not engaged by traction upon the body, but, the arms being free, both hands are placed upon the mother's abdomen over the fetal head, and it is then pressed downward and backward. This manipulation is done slowly and at short intervals. The patient should lie over the edge of the bed and the operator stand between her legs, the child being left to hang free. When the child's head has fully entered the pelvis the Smellie-Veit method is used to complete the operation.

Breech Extraction. N. Herman² presents a method of breech extraction which he proposes. Several methods of extraction which have been hitherto employed are discussed, and then the writer quotes Lusk regarding the manual method described by himself: "The expulsion of the

¹ Deutsche med. Wochenschrift, January 15, 1903.

² International Journal of Surgery, August, 1902.

child may sometimes be accomplished by a graduated pressure upon the fundus of the uterus. Should this method prove ineffectual manual extraction should be attempted. To this end the index finger should be inserted into the fold of the anterior groin, and traction may be directly downward. By seizing the wrist with the disengaged hand an increase of traction power can be exerted. If the breech is low both index fingers may be employed—the one in the anterior the other in the posterior groin, or the entire hand passed over the sacrum may seize the pelvis with the thumb in one groin and the index finger in the other.”

Herman's method is a modification of Lusk's, and the inner surface of the ischium of the child takes the place of the posterior groin. The index finger is inserted into the fold of the anterior groin as described; then the other index finger, well oiled, is inserted into the child's rectum far enough to make counterpressure to the finger in the groin and traction is made. Any little tendency to slip is entirely obviated if one hand be used as a tractor. In this case the thumb is crooked into the anterior groin and the index finger of the same hand inserted into the child's rectum, which gives a firm grip upon the anterior thigh. To use this method the breech need not be so low; hence it can be applied earlier, saving several hours of labor and possibly avoiding instruments.

Contracted Pelves. There are undoubtedly quite a number of cases of difficult labor due to a contracted pelvis which occur through the belief of the general practitioner that the subject of pelvic deformity is of little practical value; cases in which much anxiety and labor might have been avoided, and, in rare instances, where the life of the mother or child might have been saved had the deformity been recognized and proper measures instituted in time. Dr. W. R. Gilman¹ discusses some practical points in *pelvimetry* and management of cases with contracted pelves. He says reliable figures appear to indicate that contraction of the pelvis occurs in from 4 to 6 per cent. of all obstetric cases.

It must not be assumed that an operation is demanded in all cases of contraction; some, in fact a large number, are merely technical, and offer no serious obstacle to the progress of labor. It is important, however, that every physician should obtain a certain amount of information as to the size of the pelvis in every obstetrical case before labor begins. It may be taken for granted that a woman who has given birth to a child of average size in normal labor can have no considerable pelvic deformity. Every primipara should be examined before labor

¹ New York Medical Journal, February 28, 1903.

begins, preferably before the eighth month. Of the three diameters of the pelvis the anteroposterior or conjugate is the most important, and fortunately we can measure it quite accurately. To do this place the patient in the dorsal position, introduce the first two fingers of the left hand upward and backward into the vagina until the tip of the second finger touches the tip of the promontory of the sacrum. The place on the first finger which is then in contact with the lower edge of the symphysis is marked by the nail of the forefinger of the right hand, and the distance between the tip of the second finger and the mark on the first finger is measured. This gives the diagonal conjugate; the true or obstetrical conjugate is two-thirds to three-quarters of an inch less than this, according to the height and thickness of the symphysis. If the patient is a primipara with a firm perineum it may be necessary to give an anæsthetic. The obstetrical conjugate for practical purposes is the only measurement which it is absolutely necessary to make, except in unusual cases of very marked deformity. If it reaches the normal standard of 11 cm. ($4\frac{1}{4}$ inches) it is safe to infer that the pelvis is of average size. Another factor in determining the result of labor is the size and compressibility of the baby's head. It is quite impossible to determine the size of the child's head with any degree of accuracy in most cases. Therefore, it is best to consider the head as one of average size for that period of pregnancy to which the mother has advanced. In every case of slight or moderate contraction it is best to let the patient alone as long as progress is being made. Theoretically, a patient with a pelvis of certain dimensions may be expected to require assistance, but very often when labor comes on she goes through it safely without any help. If the obstetrical conjugate is 9 cm. (3.2 in.), forceps or version may ordinarily be expected to bring labor to a successful termination whenever the progress of the head is arrested. In Williams' tables we find that in 220 cases with a conjugate of 9 cm. (3.2 in.) there were 13 high forceps, 13 low forceps, 12 versions, and 3 perforations. Considering the relative merits of version and high forceps, he very much prefers version on account of the difficulties and danger to the child in the high forceps operation. When the conjugate is 7.5 cm. (3 in.) forceps or version may occasionally be successful, but extraction through such a pelvis is very difficult, and likely to prove fatal to the child. Symphysiotomy is indicated here. It prepares the way for forceps or version. It increases the conjugate by 2 cm. (0.8 in.). It has a narrow range of usefulness, and the operation should be limited to those cases in which one is certain that only a little more room is needed for a safe delivery by forceps or version. He places 7.5 cm. (3 in.) as the limit for a safe delivery by symphysiotomy. When the conjugate is 7 cm. (2.8 in.) or less

the choice of operation lies between induced labor and Cæsarean section. Induced labor at the thirty-sixth week carries with it very little more danger for the mother than labor at term, but the mortality of the children is from 40 to 50 per cent. In cases of great deformity, when induced labor at the thirty-sixth week would not allow the head to pass, Cæsarean section is the only possible means of delivering a live child. Asepsis and improved technique have so reduced the maternal mortality in Cæsarean section that it is a question if it should not replace induced labor in all cases with a conjugate of 7 cm. (2.8 in.) or less when the choice of operation is left to the physician and it is possible to secure the proper conditions. In competent hands under proper conditions the maternal mortality is less than 5 per cent. The danger to the child is so small it may be disregarded.

Concerning the treatment of contracted pelvis in labor Kroenig¹ says one uses five methods in dealing with this complication. Hard-and-fast rules, he says, cannot be made for each degree of flattened or generally contracted pelvis, because the size of the fetal head, the strength of the pains, and the impossibility of directly measuring the true conjugate forbid it.

Concerning version, he says that in those cases in which the after-coming head may be supposed to pass through the contracted inlet of the pelvis, one can never be sure that it will not come through as a vertex presentation if you wait. As version must be performed before or immediately after the rupturing of the membranes, it is impossible at that time to estimate how much good strong pains and moulding might do. The prognosis for the child is not improved, he finds, in the statistics of those clinics where version is early resorted to. The high forceps operation, as a means to overcome the disproportion between pelvis and fetal head, is not an operation agreed upon by gynecologists. Such a delivery is not safe for the mother, and will almost certainly destroy the child. The same objection holds against the induction of premature labor as against version—*i. e.*, that you do not know but that you may obtain a living child by waiting, and he regards the chances for the child as much better if the fœtus be allowed to come to full term. The other two methods—symphysiotomy and Cæsarean section—may be considered as rivals when the conjugata vera is not less than three and three-quarters of an inch. Considering symphysiotomy we must remember that it is a very difficult operation and requires a skilled surgeon and obstetrician, and that it does not immediately terminate labor. The succeeding labors are, however, frequently rendered much easier. Cæsarean section is more easily per-

¹ Münchener med. Wochenschrift, August 12, 1902.

formed and the child is delivered at once, but as these operations have a mortality of 2 per cent., he thinks it advisable to wait and see if the head will engage in the superior strait; if it does so forceps may be used to complete the labor. Should the mother's life be endangered, the fetal head may be perforated. Should there be no immediate danger, then choose between symphysiotomy and Cæsarean section.

The Mechanism of Labor and Instrumental Assistance when the Head is Transverse in the Pelvic Brim. Gillespie¹ says that the intelligent use of forceps at the superior strait presupposes an exact knowledge of mechanical relations of head to the pelvis and a careful differentiation of the cause of delay. He believes that the rule generally followed, of applying the blades to the sides of the pelvis without regard to the diameter of the head grasped, is as unscientific as an unvarying technique in hysterectomy for fibroids, regardless of the shape and direction of the growth.

Robert Barnes said: "In proportion as the head is low in the pelvis, high in the pelvis, or above the brim, the necessity, utility, and safety of forceps diminish." Only those conditions which cause transverse positions of the vertex are here to be considered.

Flat Pelvis. Usually where the conjugate of the brim alone is narrowed, Goodell's method of version is preferable to the forceps if the woman has previously borne children. If, however, there is narrowing of other diameters below the brim, or in primipara, or in women who have cicatricial bands—in short, where from any cause the delivery of the after-coming head is apt to be delayed—forceps should be used by preference, if we can place the blades to the sides of the head. When for any cause version is contraindicated and the head is arrested in the transverse diameter of the brim, the question of forceps is an anxious and interesting one. It is generally assumed that with the head high in the pelvis forceps to the sides of the head is impossible; indeed, some able obstetricians state that the blades must be applied to the forehead and occiput. This is a procedure which offers the child but little better prospects than craniotomy. In these cases the resistance of the pubes is at first greater than that of the promontory, and the pelvic side of the head is held back, the sagittal suture approaching the pubes. As labor progresses the head is pressed more firmly into the brim, the sharp promontory begins to indent the posterior parietal, and it becomes the point of chief resistance. Engagement is effected by rotation of the head round the promontory, the posterior parietal finding ample room below this point. As this movement is executed the sagittal suture recedes from the pubes and approaches the sacrum, so

¹ American Journal of Obstetrics, January, 1903.

that the amount of progress may be computed by its position. Goodell takes advantage of this mechanism in delivering the after-coming head, and by his manipulation it is possible to bring the head past the promontory, where the length of the conjugate is less than the width of the incompressible base of the skull.

It may be well to point out some of the physical conditions which make such a use of instruments easier than it would at first appear. In these cases the head is not only transverse in the brim, but approaches that side of the pelvis toward which the occiput is directed, leaving the other side comparatively free. As the concave edge of the blade must be turned toward the occiput it follows that the blade, which must find lodgement under the pubes, passes upon this comparatively empty side. While the spiral movement, which is to bring the anterior blade to its position in relation with the anterior parietal must be longer than in an oblique position, there is also much more room for the blade to pass. So long as the sagittal suture is drawing near the pubes we should keep hands off, but when it begins to recede, showing that the point of contact with the promontory has become fixed, assistance comes within the range of possibility. By suprapubic pressure the rotation round the promontory may be hastened, but frequently the uterus is exhausted before this mechanism can be accomplished. In such cases the os uteri is usually not thoroughly dilated, as the head has not been in contact with the cervix, and if we were to wait for thorough dilatation to occur we would probably have a dangerous thinning of the lower uterine segment.

This class constitutes a large percentage of cases of rupture of the uterus. If the occiput points to the left ilium the first blade is applied upon the flat directly into the hollow of the sacrum between the head and posterior lip of the cervix. The second or right blade is applied upon it, and then by a spiral movement is brought through the right side of the pelvis past the forehead, upon the anterior side of the head, until it rests under the pubic arch. The pelvic curve of the blades carries their tips well to the left of the promontory, so that they grasp the occiput. If the sagittal suture is near the pubes the anterior blade must be inserted deeply and the shank of that blade be brought well up under the pubic arch, the posterior blade, if necessary, being withdrawn and elevated to meet it and lock. If this precaution is neglected the tip of the anterior blade will grasp the head upon the anterior parietal, while the posterior blade grasps the neck. To secure a good application the handles should be as nearly as possible perpendicular to the vault. Grasp the handles firmly, make traction forward for a moment in order to fix the head firmly in the brim, then, without relaxing your traction, swing the handles backward toward the sacrum.

The head rotates round the promontory and enters the pelvis with a jerk not unlike that felt in executing Goodell's manipulation.

In executing this manœuvre the operator should pull with the arms alone and be ready to instantly relax his efforts, for the following reason: While the head is held in the brim flexion is absent, and, indeed, there is often slight extension. When flexion takes place, as the occiput glides past the promontory, the blades will slip and injure the mother's soft parts. To avoid this, as soon as the jerk of entrance is felt relax the grasp of the blades and separate them slightly and carry the handles toward the woman's left thigh, thereby increasing the security of their grasp by carrying the tips backward. Again gripping the handles, swing them forward in the arc of a circle, bringing the head into the oblique diameter of the pelvis, after which delivery is the same as in ordinary forceps cases. When direct traction is made, even in the axis of the superior strait, the head is pulled through the conjugate, but by the manœuvre recommended the traction only serves to fix it firmly, while by leverage it is canted past the obstruction. In this last procedure the space below the promontory is utilized to allow the recession of the head, thus decreasing the resistance of the pubic side of the pelvis.

Transverse positions at the brim are not always due to diminution of the conjugate. In fact, the most frequent cause is an increased tilting of the brim as a result of excess of the sacrovertebral angle. Next to occipitoposterior positions of the vertex an excessive inclination of the pelvis is the commonest cause of delay in labor. The difficulties incident to pendulous abdomen when the fundus falls forward are universally recognized, but when the fundus is posterior to the perpendicular of the brim the cause of delay is seldom detected. When the lumbosacral curve is marked the uterus is not at right angles to the plane of the brim, but the fundus is pressed back by the abdominal muscles until it forms an angle more or less acute with the posterior half of the plane of the inlet. One of the difficulties of such a condition is defective flexion. Flexion may be perfect so far as the child is concerned, but the relations of the pelvis to the uterine axis make it amount to naught. If the axis of the uterus is at right angles to the brim, the head will, when flexed, enter the pelvis with the suboccipitobregmatic diameter in relation with the diameter of the brim, but just in proportion as the sacrovertebral angle is in excess will the effect of flexion be neutralized, and in many cases the brim is tilted enough to correspond to the occipitofrontal diameter, even when marked flexion is present. We then have the longest diameter of the head presenting in the oblique diameter of the pelvis, and in case the head is relatively large delay results. The head to enter must present in a more favor-

able position. This is effected by rotating the occiput posteriorly into the transverse or opposite oblique diameter of the pelvis. Notwithstanding that excess of the sacrovertebral angle is quite common, we admit that the occurrence of posterior positions of this kind is comparatively uncommon. This is explained by the fact that in most cases where there is excessive inclination of the pelvis there is also some slight abridgment of the conjugate. We, therefore, find that in most cases the posterior rotation ceases when the head arrives at the transverse diameter of the brim. While the narrowing of the conjugate may not be great it usually plays an important part in the mechanism of labor, for the reason that heads which are not relatively large will enter the pelvis in the usual manner. It is only, therefore, where space is at a premium that this mechanism is indicated.

Lack of flexion is also intimately associated with abridgment of the conjugate in limiting backward rotation. When the fundus is posterior so that the axis of the uterus forms an acute angle with the posterior half of the plane of the brim, the force of uterine contraction will be in the direction of the uterine axis, so that they are expended chiefly upon the ramus of the pubes.

If the posterior and lateral obliquity of the uterine axis is great the resistance encountered by the occiput might be sufficient to cause a face presentation, but usually such excessive extension is resisted by the lower uterine segment and very slight extension of the head results. If the head remains well flexed it will rotate posteriorly and engage with ease in cases of excess of the sacrovertebral angle; if it reflexes or extends, it stops in the transverse diameter of the pelvis. If instrumental assistance is demanded, the same procedure is indicated as in the preceding class. The posterior blade being passed up in the sacral excavation while the anterior blade is brought through the comparatively free side of the pelvis to a position behind the pubes, the head is grasped upon its sides while traction and leverage cant it past the obstruction. In contraction of the conjugate subsequent labors are apt to be more difficult because of the tendency to progressive increase in the size of the children with each pregnancy. In many cases, however, both contraction of the conjugate and excessive inclination of the pelvis are present, and the question of increasing or decreasing difficulty must depend upon the relative importance of the two conditions.

The Modern Obstetrical Forceps. N. I. Ratchinsky¹ gives an interesting review on the subject of the obstetrical forceps. The fact that no instrument has suffered so many modifications as this tool of the accoucheur is enough to convince one of the imperfection of the

¹ Journ. Akousherstva, etc., December, 1902.

obstetrical forceps, and of the great difficulty in devising a perfect instrument. In 1838 144 modifications of the obstetrical forceps existed, and since then the number has grown to over 300. There are three types of forceps—the pelvic-curve type, the straight type, and the axis-traction type. The latter has rapidly gained favor in the last ten years in America and other countries. In Germany and Russia, though it has been frowned upon, the younger generation is gradually adopting it. All three types have their advantages, though no particular type can be said to be perfect for all the purposes of obstetrics. The straight forceps admit of rotation, though they can only be used low down in the pelvis. The pelvic-curve forceps do not admit of traction in the axis of the pelvis and force the head toward the pubis, so that a variety of manoeuvres have been devised to avoid this. None of these expedients, however, obviate the difficulty. The introduction of the axis-traction system of Tarnier marked a new era in the development of the forceps, robbed the high forceps operations of their chief dangers, and made traction in the true axis of the pelvis possible. The objections to this instrument that it is cumbersome, not easily cleaned, etc., are met by the statement that the best instrument is that which does the work properly, without injury to the parts of the mother and to the fetal head.

The rules prescribed for the use of the Tarnier forceps in the Paris clinics are as follows: 1. The forceps is applied only in the transverse diameter even when the head is transverse at the brim (Pinard), although some (Budin) apply it in the oblique diameter in such cases. 2. The forceps is not only the instrument of extraction, but also one of correction for the position of the head. It is, therefore, used to correct anterior occiputs and transverse heads. As regards posterior occiputs, they are brought to the transverse if possible by hand, and then with the forceps the occiput is brought under the pubis. 3. Once the forceps is applied to the head it is not taken off and changed in position even after the head has been rotated, and the head is extracted with the curve upward if need be. 4. Pinard does not apply high forceps in pelvis with a conjugate diameter less than 9 cm. (3.6 in.). Three recent modifications of the Tarnier forceps have attracted attention. The first is that of Vlaicos, a Turkish physician. It consists of a scale on the compression screw that gives the distance between the blades, so that in cases where the diagnosis of position is uncertain the diameter indicated on the scale shows whether the forceps has been applied transversely, obliquely, or anteroposteriorly. The second modification is that of the parallel blades of Perret, and presents the usual advantages of parallel forceps. The most important modification in this line is the modified axis-traction forceps invented by Crouzat, of Toulouse.

This forceps has a pelvic as well as a vaginal curve and an axis-traction handle. The pelvic curve begins between the blades and lock, so that this instrument can also be used as a straight forceps, inasmuch as the blades are straight. The lock is permanently secured by a simple screw. Thence the arms of the forceps bend almost at right angles downward, and again at right angles parallel to the blades. In this last bend is a groove in which plays the compression screw. The handle is attached to this screw on a very movable joint. The greater the traction the greater the compression of the head, as the screw slides in the groove with the traction, and pulls the arms of the forceps together as it does so. The force of compression is, therefore, anatomically proportionate to the force of traction—a very desirable feature. The handle is provided with an indicator needle that points to another needle in the compression screw. When these needles are opposite each other the axis of traction is correct. The forceps can be used safely and with ease by a beginner, as all that is necessary to do is to see that the indicator needles are opposite each other, and that the traction is steady and proportionate to the resistance offered. Numerous clinical reports confirm the claims of Crouzat as regards the efficiency of this forceps.¹

Cæsarean Section. At the annual meeting of the British Medical Association, in the Section of Obstetrics and Gynecology, Galabin² opened a discussion upon this subject. The statistics as to the maternal and fetal mortality following Cæsarean section, symphysiotomy, induction of premature labor, and embryotomy were reviewed and the conclusion reached that the mortality of the mother in embryotomy was nearly double that of Cæsarean section in skilled hands and under favorable circumstances, and that under such conditions Cæsarean section was indicated not only in the interest of the child, but the mother also. The complete abolition of embryotomy upon the living child, however, could not yet be effected. Cæsarean section could not be recommended to private practitioners without skill and experience in abdominal surgery. Sterilization should not be done except where the obstruction to delivery was due to malignant disease or fibroid tumors, and was better accomplished by supravaginal amputation than by resection of the tubes. Cæsarean section is not indicated in placenta prævia except by complications in eclampsia, but might be so in concealed accidental hemorrhage.

Prof. Cameron advocated the use of a pessary pressed upon the uterus to prevent hemorrhage in the initial incision, closing the uterine wound with catgut and resection of the tubes.

¹ New York Medical Journal, April 11, 1903.

² British Medical Journal, August 2, 1902.

Fritsch's fundal incision in Cæsarean section was then discussed by Dr. Munro Kerr. Basing his conclusions upon his own work, he thought the anterior longitudinal incision, if made high, was the better unless the uterus was to be removed. In that case the fundal incision was to be preferred, as it facilitated the extraction of the child.

POST-MORTEM CÆSAREAN SECTION. Where life can be saved by art, saved it should be; but when a woman dies bearing a living and viable child two conditions have to be taken into account: first, the restraint felt by surgeon and relatives about operating upon a fellow-creature, having just expired under circumstances peculiarly pathetic, while science cannot guarantee proof of actual death at any moment. Still, the relatives sometimes consent to or urge Cæsarean section. Second, it is often assumed that the chances of saving the child are so small that the obstetrician must not violate the sanctity of the death chamber on its account. The assumption on which this objection rests has been shown by recent experiences to be incorrect. Bauer, of Stettin, has recently demonstrated the value of immediate operation after death as a means of saving infant life. He shows that out of fifteen cases of post-mortem Cæsarean section recently reported in only three was the foetus dead; in two it was alive, but died speedily, while in ten it lived. Thus, two-thirds of the children were saved. Most obstetricians naturally consider that when the mother dies of eclampsia the foetus must inevitably be lost. Bauer shows that this is by no means the case. True it is that the mother had died of eclampsia in all three cases in which the foetus was dead when extracted from the uterus. But out of the total fifteen post-mortem operations eclampsia was the cause of death in eight; subtracting the three fetal deaths, five were alive, though one died speedily; thus four, or 50 per cent., were saved from mothers who had died of eclampsia. The second of the two children delivered through the uterine wound alive, yet in a dying condition, was under three pounds in weight. It is clear that we must never despair; note that only three of the ten infants that lived breathed well directly after being extracted from the uterus. All the others were more or less asphyxiated, yet were resuscitated. Professor Martin adds another success; he was commencing the usual steps for induction of labor in a case of advanced valvular heart disease when the mother suddenly expired. He at once exposed the uterus, made a transverse incision in the fundus, and delivered the child. Lichtenauer had under his care a woman who was stabbed near term, receiving two perforating wounds of the intestine; suppurative peritonitis set in. He operated before life was quite extinct; the child was alive, but soon perished. In Bauer's own case the patient, aged twenty-four years, was in the ninth month of her second pregnancy. She was

comatose from meningitis, and opisthotonos was marked. She showed slight improvement after a few days, and Bauer lays great stress on the fact that the temperature never reached 102° F. Cyanosis set in suddenly and she expired; the fetal pulse, previously 140, dropped to 100 when the mother's heart ceased to beat. Within half a minute the child was delivered through an abdominal incision. It was suckled by a recently delivered woman, and at the end of a month was in good health. The uterus contracted firmly when the placenta and membranes were removed, as sometimes happens. Two factors in his success he believes were the detection of the falling of the fetal pulse and the prompt extraction of the foetus; the relatively short period of defective aëration of the maternal blood before the death of the mother. The most favorable circumstance, in his opinion, was the absence of high temperature and septic fever, so deadly to the foetus. Conditions essentially septicæmic are much more likely to frustrate the operator than the worst kind of eclampsia of pregnancy. It would seem, in conclusion, that if the operator were present at the death of the woman (and this is essential), and that the pregnancy is sufficiently advanced for the child to be viable, it is the duty of the obstetrician to save the child.¹

Craniotomy. With the general advance in obstetrics, and especially the advance in the technique of operations, modern obstetricians are narrowing the field in which this operation is indicated. Some writers at the present day even hold the opinion that this operation upon a living child is never justifiable. Voorhees² says that craniotomy remains, however, a proper procedure in certain cases, and one which, addressed to the interests of the mother only, may often serve a most useful purpose. In the present state of obstetrical surgery the operation is clearly indicated in: 1. A non-viable child where the mother's life is in the balance. 2. In dealing with a monstrosity. 3. When the foetus is larger than the parturient canal and is dead when the physician first sees the case. Undoubtedly most of the cases which demand a craniotomy are those in which, from mistakes in judgment, from neglect, from ignorance or by bungling work with forceps or turning, the child dies or is killed, and one is forced to deliver. When, however, the womb contains a living child and the pelvis is too contracted to allow a normal birth *per vias naturales* the question of sacrificing the child becomes a different matter. The conclusion is now established among the medical profession that a planned craniotomy or embryotomy on a living child, with mother in good condition, is not justified except in cases of emergency and extreme rarity. A very important point is to decide whether we should recommend and perform one of the cutting

¹ British Medical Journal, December 27, 1902.

² American Journal of Obstetrics, December, 1902.

operations upon the mother to save the life of the child. The decision depends upon the extra risk to which the mother is exposed by performing the operation. With a mother in protracted labor from disproportion between size of foetus and pelvis, in poor condition, rapid pulse, high temperature, etc., and a tonic uterus, he does not hesitate to recommend a craniotomy on a living child, as the mother's life would be jeopardized by a cutting operation. Again, if the child be *in extremis* and its chance of living very doubtful—as in cases of protracted labor or where repeated attempts to deliver with forceps have failed—he prefers a craniotomy unless the delivery of a crushed or mangled foetus will entail more dangers to the patient than a Cæsarean section. In the latter case the danger of sepsis is much greater, but serious injury to the bladder and soft parts may also occur. With mother and child both in good condition and delivery by version or forceps impossible, we have a choice between Cæsarean section and symphysiotomy before craniotomy. In the hands of the general practitioner the operation of craniotomy will have a mortality of 35 per cent., although in the hands of skilled obstetricians it is 20 to 30 per cent. less., the mortality, according to the writer, being due to neglected, infected, or maltreated cases, for he argues that the mortality in skilful hands and selected cases should be *nil*. Symphysiotomy, in statistics reported by F. Barnes, gives a maternal mortality of 10.8 per cent., and fetal mortality of 14.5 per cent. For Cæsarean section, which showed not long ago a maternal mortality of anywhere from 50 per cent. upward, the greatest reduction in the death rate has been made. Leopold, Olshausen, and others show less than 10 per cent. of deaths. Barnes, in collected cases, gives a mortality of 7.6 per cent. both for mother and child. Zweifel did fifty cases without a death. The writer expresses the hope that this operation may gain in favor and, with the increased efficiency in technique and skill, craniotomy will no longer be performed on the living child. In the technique of craniotomy the greatest care must be observed in asepsis and antisepsis. All instruments should be thoroughly boiled, the vagina carefully cleansed, and the bladder and rectum emptied before beginning the operation. For a decapitation in impacted shoulder presentation with arm prolapsed into the vagina he advises a Ramsbotham knife-edged hook. The whole hand is inserted into the vagina with palm upward, carrying the fingers posteriorly about the neck and the thumb anteriorly. If the child's head lies toward the mother's left side, introduce the left hand; if toward the right, introduce the right hand. The knife can be passed in two ways—with the convexity posteriorly it is made to encircle the neck over the fingers to reach the thumb anteriorly or passed with the concavity backward along the thumb and guided over the neck until it

meets the fingers behind. Be sure that nothing but the baby's neck comes in contact with the knife-edge. To facilitate the cutting and to lessen the risk of injury to the mother's soft parts, traction should be made on the baby's arm to bring the neck as low in the pelvis as possible. For evisceration there is needed a long, curved, blunt-pointed scissors and strong volsella.

For a craniotomy Tarnier's basiotribe is the best of all instruments. In the operation there are four steps: 1. Perforation. 2. Introduction and application of blades. 3. Crushing of the head. 4. Extraction of the child. In the first step after the usual antiseptic preparations steady the head against the cervix or brim of the pelvis by pressure from above or grasp the child's scalp with a strong volsella and pull downward. Introduce the fingers and pass the perforator along these fingers as a guide to a fontanelle or suture, preferably near the symphysis. In breaking up the brain substance be sure the medulla and base of the brain are destroyed, lest a mutilated child be born alive making attempts to breathe. In introducing the blades follow the rules for introduction of the forceps preferably by the lateral method. Pass the blades well into the uterus, grasp the whole head with the blades applied primarily to the sides of the pelvis. Before locking the perforator should be passed well into the cranial cavity and held in place by an assistant, otherwise the vertex alone will be grasped and your efforts only partially accomplished. Anæsthetize deeply and use as little force as possible in applying the instruments. Lack of room in the cervix will at times cause a failure in introducing the second blade, after the first is in position. In such cases the posterior introduction of both blades one over the other and the rotating equally for pelvic application is of the highest value. The crushing should not be begun until an extensive hold is secured, and then crush slowly, taking care not to pinch the anterior or posterior vaginal walls and cervix between the blades. In extracting pull slowly, intermittently, and always in the axis of the parturient canal, using as little power as possible. In flat pelves after crushing, the head will often come through more easily by rotating the blades about a quarter of a circle; this brings the long diameter of the crushed head in the long diameter of the brim. If after a few strong tractions no progress is made the instrument should be reapplied. Do not remove it until the whole child is born, as the shoulders often cause delay. When such is the case and strong traction fails to deliver or the cranial vault is pulled off, the cranioclast or strong volsella will aid in delivery. For the after-coming head, perforate with the perforator of the basiotribe. With a sharp instrument any spot in the occipital region may be selected. Draw the body of the fœtus downward and backward to bring the field of operation within

reach of the guide finger. The perforator is inserted as described before along the finger, the brain broken up, and the instrument removed. Keep the opening patent; make steady traction. If the obstruction is too great, the blades of the basiotribe may be employed in the manner of applying the forceps to the after-coming head, and the head crushed. His conclusions are: 1. Craniotomy is an operation of great usefulness, but one whose field has been narrowed to cases where the child is dead, except on occasions of grave emergency and where the mother's life would be jeopardized by a cutting operation. 2. That the operation of itself should be attended with practically no mortality in the hands of a careful operator. 3. That the cutting operations, especially Cæsarean section, should be done more frequently in proper cases, inasmuch as the maternal mortality has been reduced almost to nothing in the improvement of the technique of these operations and inasmuch as almost every baby can be saved.

Perforation and Version. To bring about a discussion as to the best mode of procedure when craniotomy is necessary Zanke¹ reported his treatment of a primipara whom he was called to see twenty-four hours after labor began. The "waters" had broken and the cord prolapsed the previous evening, when the midwife advised medical aid. This was refused until the next morning. He found the pains very feeble, the os fully dilated, and the cord prolapsed and not pulsating. There was a foul-smelling discharge, an elevated temperature, and quickened pulse.

The pelvis was flattened and the diagonal conjugate measured about two inches. The fetal head could be felt freely movable above the brim of the pelvis, with the sagittal suture transverse. The mother only had to be considered. Cæsarean section was refused, and would have been dangerous on account of the foul discharge. Version, perforation, and a combination of the two were left to choose from. The fetal head was very large, and though the uterus was slack there was no contraction ring. Version was decided against. He attempted to perform craniotomy and to deliver the head by the cranioclast. Considerable force was used, but it was found impossible to deliver in this way. Version was then done, and the after-coming, perforated head delivered with great difficulty.

He discusses the point as to whether one should perforate first, then turn and deliver, or perforate the after-coming head. It is said that it is difficult to perforate successfully a freely movable head (though this was not Zanke's experience), and that it is better to perform version first.

The writer, however, believes that it is much safer, for the mother, to

¹ Deutsche med. Wochenschrift, July 17, 1902.

perforate first, and that the risks of injuring the maternal soft parts in perforating an after-coming head are considerable.

THE PUERPERIUM.

The Importance of a More Careful Examination and Treatment of Women after Childbirth. B. C. Hirst¹ says that five-sixths of the diseases of women as we see them to-day are due to the crude teaching and practice of obstetrics that have prevailed in America. They represent the faults of physicians; they could have been prevented, or could have been cured without delay, and this question concerns the medical profession closely.

The consequences of childbirth enumerated are: rectocele, cystocele, uterine retroflexion originating in the puerperium, injured cervix and all its consequences, prolapsus uteri following childbirth, subinvolution and endometritis following abortion or labor, pelvic inflammations of puerperal infection, splanchnoptosis following diastasis of the recti muscles, and coccygodynia. Not one of these consequences of childbirth the author says but can be prevented or cured before it affects the individual's health. Every woman should be subjected to three examinations after labor. One immediately or within forty-eight hours to detect the injuries of childbirth; the second before she leaves her room to determine the position of the uterus; the third at the end of the puerperium, six weeks after labor, to observe the position of all the pelvic organs and structures of the abdominal walls and coccyx and the position of the kidneys. A woman should be in as good condition after childbirth as she was before, and it is the physician's duty to see to it that she is. The author believes the greatest hope for the future lies in our maternity hospitals as they are at present equipped, and in the instruction and teaching they are giving to medical students. The Maternity Hospital of the University of Pennsylvania is one of the most modern. It has a perfect equipment for pelvic and abdominal surgery in women, and an operating amphitheatre most modern. No woman delivered there is allowed to leave, if she accepts the advice given, with any of the injuries of childbirth, subinvolution, uterine displacements, diastasis of the recti muscles, injury of the coccyx, or pelvic inflammations uncorrected. Two careful examinations are made while she is in the hospital—one within forty-eight hours after delivery; another when she is about to leave the hospital—and a third in the obstetric dispensary six weeks after her delivery. All injuries of the cervix have been repaired without exception in the University Maternity

¹ American Medicine, November 29, 1902.

for several years past, and the results have been so satisfactory that the practice will be continued. It has been found that forty-eight hours should elapse after labor before closing the lacerations of the cervix, whatever their number or extent, as they can then be successfully repaired. The author also restores the muscle of the urogenital trigonum (Waldeyer) in the anterior vaginal sulci, which is the chief support of the anterior vaginal wall and is very frequently injured in labor. This injury if neglected results in a cystocele.

The laceration of the muscle is almost always submucous. The technique of the operation is as follows: "After displaying the sulcus by three bullet forceps—one alongside the urethra, the second opposite the first on the corresponding labium, the third at the apex of the triangle which appears on the vaginal mucosa. When the first two instruments are separated a suture of silkworm-gut is passed under the sulcus, catching the ends of the torn muscle. Instead of clamping or tying this suture directly over the site of the injury, which would crowd the mucosa between the ends of the torn muscle and thus prevent their union, the end of the suture is returned superficially under the mucous membrane, and the two ends are shotted alongside the tear instead of directly over it. Three or four such sutures are usually required. The laceration is almost always worse on the left side, and is often confined to that side." It is an important question, the author believes, how all classes of society may secure the same good treatment which the poorest classes are obtaining in our best modern maternity hospitals. It would be a great blessing if those physicians who make no special claim for skill in gynecic surgery would have their patients examined by a specialist shortly after labor and again at the end of the puerperium. If some such system were elaborated to insure woman immunity from all the ill consequences of childbearing, as great an advance in medicine will be made as has yet been witnessed.

The Prevention of Mammary Abscess. The prevention of this condition must, of course, antedate the delivery of the child. The mammary gland easily becomes the seat of inflammatory processes. Ordinarily possessed of a rich blood supply, which increases during gestation, it can readily be seen how any obstruction to the circulation, arterial, venous, or lymphatic, would form a point of least resistance which would soon become the focus of an inflammatory process. When the enlarged and hardened breast, the deepened color and increased area of the areola, and the increased size and tenderness of the nipple give evidence of pregnancy, care should be taken to guard the breasts against infection. The measures recommended by H. J. Nelson¹ are: systematic

¹ New York Medical Journal, November 22, 1902.

bathing with tepid antiseptic lotions of moderate strength, followed by gentle friction from nipple to circumference every night upon retiring. The high corset should be done away with at once, and the breasts supported by a gauze sling if heavy. As the pregnancy nears the end, special attention must be given to keep the mouths of the ducts and the crevices clean, also to render them hard and firm. For this purpose nothing is so good as frequent bathing, accompanied by gentle friction, with a saturated solution of boric acid in dilute alcohol. In women in whom active lactation has begun several weeks before delivery there is greater need for care. Here as in post-partum cases the secretions must not be allowed to accumulate to the point of discomfort, even if artificial means must be employed to prevent it. In this condition rubbing the breast from circumference to nipple with cacao butter will usually be found quite effective. Only in very extreme cases should the breast-pump be resorted to. Sterilized gauze should protect the nipples and should be changed as often as saturated. Careful attention should be given to the infant from the first, washing its mouth out before and after nursing with a saturated solution of boric acid in water, and also treating the entire breast before and after nursing as directed.

The mother should be warmly clad, particularly about the neck and shoulders, avoid draughts of air, and, above all, protect the feet from dampness. When summoned to a lying-in mother or later in the lactation period, and you find a high temperature with lumps in the breast, promptly empty the breast with greatest care, using artificial means if necessary. Some evaporating lotion, such as ammonium chloride in tincture of arnica, should be applied to the entire gland upon surgeons' lint, changed as often as they become dry and hot. If this fails use the ice-water coil—half-hour on, half-hour off—until the danger is averted. Watch particularly for fissures and excoriations, which are oftener the starting points for mammary abscesses than all other conditions combined. When ulceration first shows itself in the nipple a cap or shield worn over it will give good protection. The child should nurse through a glass shield fitted with a rubber nipple. This will prevent the irregularity of the child's sucking force, and do away with the twisting and wringing of the nipple by a vigorous infant, which tends to keep the ulcer from healing. Should these measures, in conjunction with thorough asepsis of the child's mouth, fail to relieve, the ulcer should be cocainized and cauterized with a sharp pencil of sulphate of copper. In some cases, when ulceration is persistent and abscess is seriously threatened, nursing should be stopped in one or both breasts, and only sufficient milk taken away artificially to relieve tension. At the same time, should it be necessary to stop the child sucking, a large belladonna plaster should be applied covering

the entire gland save the nipple. Should it be necessary to stop nursing entirely, this plaster should be worn continuously until the lacteal secretion has been entirely suspended. Should the ulcer heal, however, the plaster may be removed and nursing again attempted.

Massage of the Breasts. Concerning massage of the breasts, Bacon¹ criticises the methods advocated in the text-books on this subject. He says the aim of massage is not to relieve the breast of the accumulated milk, but to empty the overfilled lymphatics and veins. The patient lies upon her side and the masseuse begins in the axilla and gradually works toward the centre. The pressure at first is made very lightly and with the fingers only, increasing gradually as the parts become less sensitive. The fingers and palms, under part of the hands, and balls of the thumb are then used, and gradually one works to the axillary space and upper border of the breast. With the other hand the masseuse begins to work below the breast while the first one works above toward the inner side. When properly done this treatment relieves to a great extent the tenderness and it is pleasant to the patient. The skin becomes soft and loose, and about half of the milk will have been expelled. This amount of manipulation will be sufficient and the breasts should be supported by bandages. Contraindications to massage are mastitis, where the inflammatory area would be disturbed and numbers of bacteria might be dislodged and transplanted, becoming foci of more trouble. Massage at the beginning of lactation is indicated only in cases of painful, distended, and non-infected breasts that cannot be relieved by supporting bandages. In these cases it is well borne and very efficient.

PUERPERAL INFECTION.

The Intravenous Injection of Formalin in Acute Streptococcus Infection. Almost coincident with the report of Dr. J. M. Fortescue-Brickdale in the *Lancet*, January 10, 1903, concerning the efficacy of the intravenous injection of formic aldehyde in septicæmia, as set forth by his experiments upon animals, we are furnished with the reports of the remarkable result achieved by Dr. Barrows, of New York, in applying the treatment to a case of acute streptococcus infection of such severity that the patient was almost *in articulo mortis*. During the discussion following the announcement of Dr. Barrows' procedure it was announced that experiments would be begun at once upon animals to determine the amount of dilute formic aldehyde that could be safely injected and to what extent it would counteract an artificially produced

¹ American Journal of Obstetrics, June, 1902.

septicæmia. The experiments of Dr. Fortescue-Brickdale are quite apropos in this case, though they do not substantiate many of the wild claims made by the press. He finds that formic aldehyde can be injected intravenously into healthy animals in such amounts that when blood is withdrawn from the body it distinctly inhibits the growth of bacteria *in vitro*; but when rabbits were artificially infected with anthrax bacilli or the pneumococcus it was found that small doses of formic aldehyde had no effect, while they were so depressed by large doses that they died earlier than the untreated animals. His conclusion is that "it seems useless to continue trying to apply clinically a method which, while by no means free from special dangers and difficulties, is at present unsupported by any experimental evidence, either as to its present advantage or future prospects.

Dr. Barrows¹ states his belief that when streptococci have been demonstrated in the blood such a condition can be satisfied by the introduction into the general circulation of a solution of formaldehyde of a proper strength for the destruction of the pathogenic germs without injury to the patient. He bases his belief upon experiments with animals in his own hands and those of others, as well as experiments upon human beings in the hands of other investigators, and the successful outcome of the case he reports. Experiments are now being conducted upon animals the reports of which he hopes to give when completed. The experiments for the determination of the safety of the patients into whom transfusions are made and the harmlessness of the infusions are absolutely satisfactory. The experiments of R. Maguire² upon animals and himself are quoted. Maguire concluded that formaldehyde in a solution of 1:200,000 was a very efficient germicide. So that it seems beyond controversy that such solutions as were used by Barrows in his case can be employed with perfect safety to the patient. It is also a well-established fact that a saline solution can be introduced into the veins in almost unlimited quantity, provided it be made carefully and slowly so as not to embarrass the right heart. Barrows says that with these facts established and the failure of serum therapy in such cases it would seem that intravenous infusion of formalin in acute streptococcic infection of the blood holds out a fair hope of success.

Dr. Barrows reported his case at a meeting of the New York County Medical Association, January 19, 1903. The patient was a negress, aged twenty-six years, who was in labor at the time of her admission. On admission she was having a chill. Her temperature was 104.2° F., pulse 124, respirations 30. She had a fetid, bloody vaginal discharge. She was delivered of a macerated, decomposed fœtus of about six

¹ New York Medical Journal, January 31, 1903.

² Lancet, December, 1900.

months' growth, and after the secundines had been removed was given a 1:10,000 intra-uterine injection of bichloride of mercury. Following this she had a chill and rise in temperature. On the following morning her temperature had reached 108° F. At 2 P.M. that day she was given an intra-uterine douche of hydrogen peroxide, followed by normal saline solution. The douche brought away a considerable quantity of clots and shreds of decomposed tissue.

She was subsequently transferred to Dr. Polk's service in Bellevue Hospital, where she was curetted and more decomposed tissue removed. She was then very septic. On December 30th, five days after her admission, a blood culture revealed a pure streptococci culture. Dr. Barrows saw her at this time, when her temperature was 108° F. and her pulse 160. She was thought to be almost moribund. She was, however, given 500 c.c. of a 1:5000 aqueous solution of formalin. Three hours afterward her temperature was 102° F., and three hours after that it had fallen to 101° F. The pulse at that time was 104, respirations 28. Three hours from this time her temperature had risen to 103° F., but in another three hours the rectal temperature was 95° F. Her temperature fluctuated rapidly for some hours, when she was given 750 c.c. of the same formalin solution intravenously. Following this she had a chill and rise in temperature, but in about twelve hours her temperature fell to normal and practically remained there, while now she seems apparently well.

E. Waitzfelder also reported a case which had been admitted to Gouverneur Hospital. She had been curetted two days before admission. When admitted she had a temperature of 102.5° F., pulse 120, respirations 26. Her blood was found to contain numerous streptococci. She grew steadily worse. On January 13th she received 750 c.c. of normal saline solution by hypodermoclysis. Within twelve hours her temperature fell from 105.5° to 96.25° F. The next day it rose to 103.5° F. She was then given 500 c.c. more of saline solution. On the seventeenth day of the disease she was still in a desperate condition and was given 750 c.c. more of saline solution, which caused another fall in temperature, but in twenty-four hours it had again reached 105.5° F. It was then resolved to try Barrows' method. On January 15th she was given 750 c.c. of a 1:5000 solution of formalin intravenously. In twelve hours the temperature fell from 104.5° to 96.75° F., but in another twelve hours it reached its former height. On January 17th she was given an intravenous injection of supposedly the same strength solution she had received before. It, however, proved to be a 1:2500 strength, and after she had received 100 c.c. she became cold and blue. It was immediately stopped. Restoratives were given. Then a normal saline solution was given

with exactly the same result as the first formalin injection. The reporter believed, admitting that the record was incomplete, that the fall of temperature was due to the entrance of a quantity of watery fluid and not to any germicidal action of the formalin. A blood examination showed a reduction of hæmoglobin after the injections; that the red blood corpuscles were shrunken, and not at all like those observed after a simple saline infusion. W. L. Bauer reported the case of a woman who had been struck on the head with a spittoon. She had a slight scalp wound which healed nicely. She developed a broncho-pneumonia and streptococci were found in pure culture in the blood. Barrows' method was tried, but, Bauer thought, with no special influence either way. This patient eventually died, and the autopsy revealed death due to blood-poisoning.

J. Whitridge Williams was inclined to view this subject with great reserve, because clinical experience had demonstrated to him that it was by no means an infrequent occurrence for cases of streptococcus infection to remain for a week or more on the verge of dissolution and then suddenly, independent of treatment, to improve and go on to recovery. Maguire, he said, eighteen months after he had issued his second paper on the treatment of pulmonary tuberculosis by formalin injections, had felt called upon to issue a statement which set forth the subject in a much less rosy hue. He had himself observed one or two cases in which the use of 1 : 5000 aqueous nitrate of silver solutions had apparently yielded happy results; and although these results were supposed by many to be due to a setting up of a leucocytosis, the cases observed by him had been characterized by an absence of leucocytosis. Barrows emphasized the fact that he had reported his case as acute streptococcic infection and not as one of puerperal infection. He states that the value of the treatment depends upon its being correctly and scientifically applied. The profession is warned against its indiscriminate use where blood cultures have not been made. He also suggests the use of the normal salt solution for making the formalin solution, as no change takes place in the formaldehyde by so doing. No harm has been done to the blood cells by the infusion of formalin in distilled water, but theoretically the salt solution is to be preferred.

An interesting note upon Barrows' case is the result of a blood examination at the time of the patient's admission. A leucocytosis was present, also the malarial plasmodia. Streptococci were not found in the blood after the first infusion of formalin solution, and microscopic examinations failed to show any changes in the blood corpuscles.

The first announcement of this plan of treatment was heralded throughout the country, and doubtless many patients received this treatment with varied success. I employed it in several cases, although

on theoretical grounds it did not appeal to me. The results obtained I have repeatedly observed from the use of normal salt solution. It has seemed to me, *a priori*, that to attempt destruction of virulent streptococci in and through the blood current by means of a germicidal solution would require such solution in sufficient strength as to be destructive to the blood elements, and therefore necessarily of no practical value.

Surgical Treatment of Puerperal Sepsis. Montgomery¹ says that if the obstetrician would follow the surgeon more closely in his practice of aseptic methods the mother will less frequently have need for the services of a surgeon following confinement. The condition resulting from puerperal infection, he says, are in some degree worse than death, but health may be restored by calling in the surgeon. There are two kinds of infection—putrefactive and septic—and of the two the onset of the septic is earlier and more insidious. It may make its way through the mucous membranes to the peritoneum, or be conveyed by the bloodvessels or lymphatics. It manifests itself as endometritis, metritis, salpingitis, oöphoritis, cellulitis, or peritonitis. The uterine cavity is free of any retained products, while the lochia is not necessarily offensive. The uterus is found enlarged and tender, with the patient's general condition bad. The patient usually runs a course of fever, chills, with profuse perspiration, and tenderness with pain in the structures involved. Pus collections may occur in the uterus, tubes, ovaries, cellular tissue, or peritoneum, while secondary abscesses may form in any part of the body. When the symptoms of childbed fever are manifest one of the first inclinations of the surgeon is to scrape the uterine cavity. When the uterine cavity is free from retained products the author believes such a procedure doubtful, as it will open up new avenues for the spread of the infection. Digital exploration and scraping of the uterine cavity associated with irrigation with large quantities of normal salt solution will remove the loose debris from the surface and the decomposing and infected clots from the uterine sinuses. Follow the irrigation by packing the uterine cavity with iodoform gauze to keep the walls separated. Careful exploration should be made for any inflammatory exudate, and if found it should be drained through the vaginal vault and the cavity packed with iodoform gauze. The occurrence of localized abscesses indicates immediate operative procedure. These abscesses may involve the uterus, ovary, tubes, or peritoneum, and may require the removal of an ovary or tube or even the uterus. Hysterectomy, the author says, is not only unnecessary, but frequently of no avail. Intravenous injections of normal salt solution

¹ International Medical Magazine, August, 1902.

in the early stages of the infection will promote the elimination of the poison, while in the latter stages it is a valuable means of support.

M. D. Mann¹ recognizes three general classes of infection: 1. The saprophytic, due to retention within the uterus of dead material. 2. The streptococcic or similar virulent process which soon becomes a systemic condition and defies intra-uterine treatment. 3. The gonorrhœal, which is usually though not always a circumscribed and not very virulent infection. His methods for treating these different conditions are as follows: 1. The nature of the infection is at once determined by Döderlein's or Williams' method. As regards curetting, explore the interior of the uterus first with the finger and if any offending body be found remove it with curette forceps; then, if the case be one of simple retention of putrid secundines, the uterus is irrigated and packed with gauze. If the case be one of mixed infection, then, following the curetting, a cul-de-sac operation should be performed and the curetting should not be repeated. If the case be one of septic endometritis with a smooth lining to the uterus and no foreign body present a curetting will probably do more harm than good. His rule regarding curetting is: do it only when clearly indicated; do it thoroughly, not roughly or too forcibly, and do not repeat it. 2. If a pus tube be ruptured during labor the abdomen should be opened at once and the tube removed. 3. Infected fibroid or ovarian tumors usually demand a hysterectomy, almost certainly in infected fibroids. 4. In the opening or removal of ovarian abscesses, Mann, although he has not met with the kind of cases he describes, commends Henrotin's operation for their relief. 5. In the treatment of parametric abscesses he says he has not determined to his entire satisfaction how best to treat them, except in the earlier stages, where he agrees with Henrotin, that "such an infection is almost certain to be streptococcic in origin, hence extreme care should be taken to avoid infection of the peritoneum, for to let freely acute streptococcic pus into the abdomen is almost sure death." 6. Concerning laparotomies Mann is opposed to them for exploratory purposes. For septic peritonitis, if it is diffuse and the diagnosis has been made in the first twenty-four hours, then the open method should be resorted to at once, as the only one promising much hope. Pryor's method for vaginal drainage in early peritoneal infection is approved, though he is not prepared to go to the length of using it in simple cases of putrid endometritis. 7. Concerning vaginal or abdominal hysterectomy, he says that taking into consideration all the difficulties connected with such a case, such as difficulties in diagnosis, in determining the time for operation, weakened condition of patient, etc., we must conclude that "he

¹ American Medicine, February 7, 1903.

who operates often operates too much." 8. The operation for the removal of thrombosed and infected veins has up to this time not been done in this country, but he believes it deserves more attention than has been paid to it.

Hysterectomy in the Treatment of Puerperal Sepsis. This subject was discussed by Osterloh¹ in a communication to the Society for Natural Science and Hygiene, Dresden. The writer says this procedure was first undertaken by B. J. Schultze in 1886. It was done on account of the retention of the placenta and puerperal sepsis; the treatment of the stump was extraperitoneal and the patient recovered. Schultze's indications were as follows: 1. There must be present in the uterus an active infection which cannot be dealt with successfully through the genital canal. 2. There must be no imminent source of infection elsewhere than in the uterus. 3. The existence of foci of septic infection such as thrombus or emboli already deposited more centrally should be improbable. From the scarcity of reported cases in the years immediately following, it would appear that gynecologists were loth to follow this treatment in indications so narrowly limited, for in cases where the uterus alone was infected the objection was possible that it was not necessarily incurable. And, on the other hand, while interference was postponed the infection spread and prospects of a successful operation decreased. Prochownic has followed the subject since, collecting the reported cases and reporting his own views and experiences. For many years he had made bacteriological researches on the condition of the blood in diseased puerperal women, obtaining cultures therefrom generally in from twelve to fourteen and at the latest within twenty-four hours. In all positive cases streptococci only were present, and all such cases were fatal with some exceptions. Of the women whose cases were negative some had very severe general symptoms, but all except two (peritonitis purulenta, without pyæmia) recovered. He sums up his researches in the principle that hysterectomy of the septic puerperal uterus should depend on unremitting and exact clinical observation of the case, assisted by blood culture. When pyæmia is evidently present, if the case be complicated by tumors or putrefied ovular remains, and septic, perhaps criminal, abortion, hysterectomy is imperative, without wasting time, so valuable for the maternal life, in other measures. Even in the absence of such complications of pyæmia the operation is justifiable if the disease is limited to the uterus.

Serum treatment has failed Prochownic even when there has been positive proof of streptococci in the blood. Döderlein² also considers

¹ Münch. med. Woch., 1902, No. 21.

² Ther. Monatsch., 1899, S. 639.

that in certain rare cases of infection of unusual type the total extirpation of the uterus is justified and successful. He also considers it very difficult to lay down precise indications. While he treated two cases successfully in this manner, he says he cannot feel sure he would have lost them without operation. Cœliotomy in diffuse purulent peritonitis was discussed by v. Winckel.¹ He performed the operation on a woman discharged from the clinic on the eleventh day after confinement. She was readmitted five days later with profuse purulent peritonitis and recovered. Regarding total extirpation he says: "To remove the uterus in every case with the adnexa simply because it has been the point of departure of the disease, and that before allowing time to see whether the condition of the patient is not materially improved by the removal of the copious exudation, is, in my opinion, all the more premature and irrational, because we do not by any means remove all sources of danger in this way, but must leave numerous foci of pus in the abdominal cavity."

Everything yet published points to the difficulty in defining the indications for the operation. The number of cases for which it is suitable is very limited, and the prospect of success very doubtful. Of course, the prospect is better if the operation be undertaken in time, before the formation of secondary foci of infection, but here the objection can always be raised that septic infection confined to the uterus can be cured without any radical surgical treatment. Indeed, we see cases recover in which the infection has spread to other organs. The mortality of puerperal sepsis is high, and there is reason to fear lest it be made higher by radical surgical interference.

Fehling,² of Strasburg (Lucina, October, 1902), in opening the debate upon this topic at the Fourth International Congress of Obstetrics and Gynecology, at Rome, distinguished between intoxication and infection in puerperal disease. In intoxication or sapræmia the focus of disease is limited to the uterus; in infection it is very rarely so limited, and for the most part we deal with a grave puerperal infection of the entire organism. In general septicæmia the extirpation of the puerperal uterus offers no probability of success and should not be attempted. No rational indication for such a proceeding can be found unless the focus of infection or intoxication is limited to the uterus—that is to say, in cases of retention and decomposition of the placenta or parts of it; in putrefaction of myomata during childbed, or ovular remnants after abortion, when it is impossible to remove such in any other way. The indications for such intervention are, therefore, extremely rare. In exceptional cases of uterine phlebitis hysterectomy might be of use

¹ *Ther. Monatsch.*, 1895, S. 178.

² *British Gynecological Journal*, November, 1902.

if it were combined with the ligature or excision of the thrombosed veins of the broad ligament, and of the utero-ovarian veins. The operation might, therefore, be done in exceptional cases. Practically the four members who reported agreed that hysterectomy is not justifiable save in exceptional cases, in which the infection is confined to the uterus, and then only when all ordinary treatment had failed. No general rule can be laid down. The surgeon's decision must depend upon the clinical syndromata of the individual case.

TREATMENT OF PUERPERAL PYÆMIA. That form of puerperal pyæmia in which the general infection is due to a septic thrombosis of the uterine veins is discussed by Trendelenburg.¹ Out of forty-three autopsies performed in cases of death from puerperal infection twenty-one deaths were found to be due to pyæmic thrombosis. In four of these cases, however, a lymphatic infection was also present.

The thrombosis begins in the uterine veins as a localized process; it gradually extends into the large internal iliac and ovarian veins, and, finally, pieces of thrombi are carried off into the general circulation and symptoms of a general infection arise. This form of thrombosis bears a close resemblance to thrombosis of the lateral sinus in its clinical course, pathological anatomy, and in its tendency to run an acute or a more or less chronic course. Puerperal thrombosis is the more chronic of the two.

Operative treatment is a very difficult proposition on account of the great number and inaccessibility of the veins involved. Twenty-one autopsies revealed the thrombosis bilateral in fourteen cases. In five of these the thrombosis was confined to the veins in the parametrium, but in nine it had extended into one or more of the large trunks, the internal iliac veins being involved twice as frequently as the ovarian. To reach the internal iliac vein use the same incision employed in extra-peritoneal ligation of the external iliac artery, and by prolonging the outer end of this incision toward the tip of the eleventh rib the ovarian vein may also be reached without opening the peritoneum. Early interference by ligation and excision prevents embolism and converts the condition into a local one. The author operated upon four acute cases, but in all the purulent thrombi had extended into the larger trunks; none recovered. Another case developed chills and fever on the seventh day following an abortion. A pelvic abscess was drained through the vagina on the twentieth day. Fever and chills continued, and on the forty-third day the common iliac vein was divided between the ligatures near its junction with the external iliac.

No thrombus was found, but some discoloration of the veins was

¹ Münchener med. Wochenschrift, April 1, 1902.

present. The patient did fairly well, and had no chills for ten days, when they again commenced and developed with increasing severity. On the seventy-fourth day the right ovarian vein was exposed and a thrombus removed by excising two inches of the vein. A grayish-yellow thrombus was found. The patient immediately began to improve and the chills ceased. An irregular fever persisted for some time, but she made a gradual and satisfactory recovery.

Accident from Thrombus after Puerperium. A case which terminated fatally and caused by going about too soon after the puerperium is reported by Chiari.¹ The patient was twenty-eight years of age, and was confined with her fifth child. She had a normal labor, and had progressed naturally until the thirteenth day, when she got up and went to church. When she returned chills and fever developed. The following day she was drowsy and had some fetid lochial discharge with an increase in the size of the uterus. On the seventeenth day she complained of pains in her left shoulder-joint. On the nineteenth day pleurisy with effusion developed, and upon examination streptococci were discovered in the effusion. Several days later she developed pain in the left elbow-joint, also a pustular rash on the body and limbs; her temperature became high and nephritis was also present. She died in the fourth week, and the autopsy revealed a thrombus three-quarters of an inch long in the left common iliac vein. It contained streptococcus pyogenes. No great number were found in the uterus, though large numbers were present in the pleural effusion. The cause of death from the general sepsis was deemed to be due to her going about too soon after delivery, thereby detaching a portion of the thrombus.

Cholecystotomy after Labor. Potocki² reports the following case: The patient was aged thirty-three years, strong and robust. When she had passed the eighth month of her second pregnancy she was seized with pains in her right hypochondrial region and flank, accompanied by nausea, vomiting, and tympanites. When admitted to the hospital, two days after the beginning of the attack, she had a high temperature and pulse, and there was a tender, visible swelling in the right hypochondrium. The writer diagnosed cholecystitis, but as labor pains commenced he decided to deliver her first. A living male child, seven pounds in weight, was safely delivered, though an adherent placenta caused some annoyance and trouble. After the delivery the distended gall-bladder could be more easily palpated.

The following morning she had a chill; temperature rose to 104° F., pulse 144. A cholecystotomy was performed. The gall-bladder contained much pus, bile, and minute quantities of calculi. These were

¹ Prag. med. Wochenschrift, 1902, No. 2.

² Compt. Rend. de la Soc. d'Obstét. de Gyn. et de Péd. de Paris, June, 1902.

easily drained off, but a large stone found blocking the cystic duct could not be removed after dilatation and use of forceps. The gall-bladder was sutured to the wound and drained. As a fistula persisted the gall-bladder was removed six months afterward by another operator. The writer remarks that biliary lithiasis seems to be favored by pregnancy.

Puerperal and Gestational Paralyzes. Aldrich¹ distinguishes and makes separate divisions of the paralyzes occurring in the gestational period and those occurring during the labor and lying-in period, naming them respectively gestational and puerperal paralysis. A very interesting report of his own cases and a summary of the literature on the subject are embodied in the paper. A case of contusional neuritis is reported as follows: The patient was twenty-eight years of age; pregnancy normal; confined November 9, 1900. After being in labor fifteen hours she was delivered by forceps without anæsthetics, a slight laceration resulting. Immediately after the forceps was applied she felt a sensation of weakness and paralysis in the right leg and thigh. Following the delivery the leg became cold and numb, and remained powerless with considerable loss of sensation below the knee. The control of the urinary sphincter was lost for a time, but the anal sphincter was not affected. She had no chills or fever during her lying-in period. Examination showed the patient undersized, and the pelvic diameters all under normal. The anterior tibial and peroneal groups of muscles were considerably atrophied, and both peronei and tibialis anticus showed the reaction of degeneration to the galvanic current. A brief summary of two cases similar to this previously reported is added. The first, aged twenty-six years, had a long, severe labor with forceps and chloroform. The morning after delivery she had much pain in the right leg and hip and was unable to lift that leg. All the symptoms increased in severity, accompanied by all the distressing symptoms of a severe neuritis. The pain was entirely in the course of the popliteal nerve, with some anæsthesia present on the dorsum of the foot and toes. Eighteen months later a considerable loss of volume was found in the anterior tibial and peroneal groups. The second case, a primipara, aged thirty years, with a contracted pelvis, had a severe labor of fourteen hours with forceps and chloroform. The labor was followed by severe pain in the left hip and leg, also numbness and tingling on the outer and anterior aspect of the right leg, with loss of power. Motor paralysis increased until the leg was practically useless. No chills or rise in temperature occurred. Twenty-two days after labor she was examined, but nothing could be elicited except exquisite tenderness of the pelvic nerves.

¹ American Journal of Obstetrics, September, 1902.

Qualitative and quantitative changes to the galvanic current were present in all the muscles supplied by the peroneal nerve. Paralysis and atrophy, with some loss of tactile sense, followed. She finally made a good recovery. Subsequently she had two children, both smaller than the first, and in each instance she suffered a repetition of the attack, but much less severe than the first. Another case of extensive paralysis, resulting from a badly conducted forceps delivery, was particularly bad. The child's head was lacerated and the lower jaw broken. Immediately after her delivery the bladder sphincter was found to be paralyzed and some difficulty was experienced in moving her bowels. Her greatest suffering was from pain about the hip and pelvis extending down to the posterior portion of the legs, with burning pains and loss of sensation on the outside and anterior aspect of each leg and dorsum of the foot. There was complete paralysis and wasting of the anterior tibial and peroneal groups on either side. The greatest interest to the writer was the paralysis, atrophy, and loss of sensation, most marked in the distribution of the popliteal nerves. He says that the paralysis is due in these cases to an actual contusion of some part of the sacral plexus during labor needs no further demonstration. Bardeen has suggested a possible explanation. He says: "The upper roots of the sacral plexus do not lie upon the pyriform muscle, but against the bony wall of the pelvis, and are thus exposed to injury from pressure during difficult labors. It is the dorsal offsets of these roots which lie against the bone and which receive the chief injury. The external popliteal nerve is made up from these dorsal offsets, and, therefore, the paralysis is chiefly localized to the distribution of this nerve." All these cases seem to be independent of any pelvic inflammation or exudate. Winckel states that even such slight pelvic exudations as accompany phlebitis may compress the nerves, and, still more important, small extravasations into the nerve sheaths may occur. Hünemann reported a case of severe sacral neuralgia where the autopsy revealed numerous thrombotic veins in the pelvis, one of which lay alongside the sciatic, to which it was bound by inflammatory deposits.

Delivery of a Patient Dying from Meningitis. A case is reported by Arzac and Lafond¹ of a girl admitted to the hospital pregnant, close to term. She had contracted syphilis in the fifth month of her pregnancy, and at the time of admission had a hard sore on one labium majus, while roseola, mucous patches, and alopecia had developed. She had not been under treatment, and for two weeks had had violent headaches. On April 28th she had a rigor which was followed by mental derangement. She was admitted on the 29th. Acute cerebral

¹ Rev. Mens. de Gyn., Obstét., et Pæd. de Bord., September, 1902.

meningitis developed immediately in its worst form, and on May 2d she was completely comatose and in a dying condition. As the child was alive, the mother was placed upon the table and the cervix dilated manually. A considerable quantity of liquor amnii came away as the membranes were ruptured. A foot came down and delivery was progressive. Forceps had to be applied to deliver the after-coming head. The child was somewhat asphyxiated, having two coils of cord tightly wound about its neck. After forced respiration it was soon revived. It weighed over five pounds and showed no signs of syphilis. Hemorrhage set in and the placenta, which was large, was delivered manually. No macroscopic signs of disease were visible. The patient died a few hours after delivery. The autopsy revealed pus under the arachnoid at the vertex and at the base. All the appearances of sporadic meningitis were present. It was believed the cerebral condition was caused by syphilis. Mercurial treatment, which had been given after her entrance to the hospital, was instituted too late to produce any benefit or to aid in diagnosis. Lefour considered that had post-mortem Cæsarean section been performed in this case the child would surely have been lost.

Recurrent Myelitis in the Puerperium. Before the Leipzig Obstetrical Society Winscheid¹ reported a very unusual and inexplicable condition which he had observed in a case. Five weeks after a normal second labor he was consulted about a patient who had developed grave paralytic symptoms. Nothing was said about such complications after the first labor. This attack came on with violent vomiting, which lasted for several days. Paralysis of both legs then rapidly developed, accompanied by difficulty in urination. The paralysis was complete in two weeks. The patellar reflex greatly increased, while ankle clonus was marked in both feet. Sensation was completely lost in both legs, and on the abdomen almost to the umbilicus. There was no sensation in the leg muscles, but pin-pricks caused tremors. The leg muscles also responded to electrical stimulus. One month later the local paralysis still remained, but sensation was almost completely restored in the legs. For a time there had been complete incontinence of urine, but at this time water could be passed normally. Throughout the illness there was no fever. Upon making inquiries about her first labor the writer found that she had had a similar attack in her first puerperium about eighteen months before. It began, over a month after delivery, with fits of vomiting like those of the present attack; difficulty of micturition and paraplegia followed. The nerve symptoms disappeared totally in ten weeks. There was no evidence of hysteria. The diagnosis

¹ *Centralb. f. Gynäk.*, 1902, No. 19.

remained uncertain, but the course of the disease suggested an acute infection, though no local or general infection was detected at the first attack, nor could it be explained how the recurrence took place. There were no symptoms of vertebral disease.

THE NEWBORN INFANT.

Infection of the newborn infant is probably the most frequent cause of death during the first week of life, and this is especially true in hospitals. The umbilicus is doubtless the most frequent atrium for infection, and any means to protect the infant from this source of infection is of the greatest practical value.

Treatment and Ligation of the Umbilical Cord. The following method has been used by Petroff¹ with excellent results, and is described by him in *Roussky Vrach*, September 7, 1902. The method was originally devised by Kousmine, but the writer has used it for four years. Instead of ligating, a specially made rubber ring is applied to the cord by an instrument devised for the purpose. The rings are made from best quality gray rubber and have a diameter of from 0.9 to 1 cm. and a thickness of from 0.2 to 0.3 cm.; the diameter of the lumen is about 0.3 cm. The instrument for applying the ring is constructed in the form of forceps with hollowed or deeply grooved blades, in the middle of which is a raised portion for the compression of the cord. The ring is placed on the forceps before labor, and the whole sterilized and placed in a 2 per cent. boric acid solution until needed. The umbilical cord is compressed about $\frac{1}{2}$ cm. from the body by the forceps and the navel string is cut just above the forceps. The ring is then moved down from the forceps upon the cord, and the forceps is removed. The ring usually remains just at the skin edge of the cord or a few millimetres above this point. The stump is now shortened to 1 cm., and, after the bath, covered with cotton, which wraps the ring and partly separates the ring from contact with the skin. Next comes a compress of squares of gauze, over which is powdered dry gypsum, and over that another layer of gauze and a bandage. The stump in from ten to twelve hours dries, and becomes mummified to the consistency of cartilage. At the end of twenty-four hours the rubber ring begins to sink into the depression of the navel, thus leaving no part of the umbilicus uncovered, as in the usual method of treatment. The children were bathed every day, and in no case out of a series of four hundred so treated was there any absorption of septic material into the navel.

¹ New York Medical Journal, September, 1902.

Treatment of Asphyxia Neonatorum. It is stated by J. B. de Lee,¹ in regard to the treatment of asphyxia neonatorum, that prophylaxis plays a very important part. The fetal heart sounds should be carefully watched and studied during labor, especially toward the end of the second stage. In preparation for treating the condition the physician should have in his case rubber catheters for aspirating the bronchi, and in case it is an operative delivery a hot bath and hot towels should be ready. Should the danger to the child be recognized *in utero*, it should be delivered as rapidly as possible, considering safety to the mother. The degree of asphyxia should be determined at once the child is born.

In mild asphyxia the child is rigid, blue, with turgid lips, and slight exophthalmos; the trachea and pharynx are full of mucus, and when it gasps no air can enter the lungs. The throat reacts to the finger. In severe asphyxia the extremities hang down, the surface is pale, the jaw falls or is jerked by an occasional gasp, the heart beats faintly or is only perceptible to the ear, and the throat does not react to the finger.

You should maintain the body heat, free the air-passages from obstruction, and stimulate respiration or supply air to the lungs. The importance of maintaining the body heat is not always fully appreciated. The infant is wet, exposure often prolonged, and evaporation rapid, with the result that the body temperature sinks. Therefore, the infant should be placed in a full warm bath or wrapped in warm towels. In mild cases the air-passages may be cleared by wiping the throat with a soft towel wrapped around the little finger, at the same time inverting the child and holding it by the ankles. If slight respiratory movements occur while the infant is held in this position there is no danger and it will soon cry. In severe cases the deeper passages must be cleared, and this is best done by means of a soft woven catheter open at the end (No. 14, French). The catheter is introduced along the index finger of the left hand, which reaches the epiglottis and pulls it forward. It is inserted into the trachea by a gentle twisting motion given to it by the fingers of the right hand.

The foreign matter in the trachea is withdrawn by slight suction, repeated several times if necessary. In asphyxia livida this is almost always sufficient, as the manipulation of the catheter irritates the throat and stimulates respiration. In asphyxia pallida the air-passages must be cleared as quickly as possible and artificial respiration begun. The writer says only three are of service: rhythmical compression of the chest, Schultze's method by swinging, and mouth-to-mouth insufflations with the tracheal catheter.

¹ International Medical Magazine, August, 1902.

Schücking¹ reports his success in reviving a stillborn child by infusing a saline solution into the umbilical vein. All the customary methods of resuscitation having failed, he cut the cord and introduced the canula into the umbilical vein. When 30 c.c. (5j) of the solution had been thrown into the vessel distinct heart beats became perceptible; 20 c.c. (5v) more were infused and the child made efforts to breathe. Artificial respiration was then resumed and the child survived. The solution used contained 0.5 per cent. of fructosate of sodium in addition to the 0.7 per cent. of common salt. The fructosate of sodium is believed to unite with some of the carbonic acid, which has accumulated in the circulation, to form sugar and sodium carbonate. It is believed lessening of the amount of carbonic acid relieves the overcharged heart and respiratory centres, the paralysis of these centres then disappearing.

A method for resuscitation of infants from asphyxia is reported by Minkévitch.² He claims for it that while it is based upon the same principles as the method of Schultze it is less violent and less dangerous. The infant is first held vertically, head down, while the mouth and pharynx are cleared from mucus, etc. Then, the cord having been tied and cut, the child is placed upon a bed or table covered with a cloth to prevent its slipping. The legs should be extended and separated. The accoucheur stands behind the child and places a hand in each axilla, the thumbs resting on the scapulæ and the fingers upon the anterior surface of the chest. The trunk is now bent forward toward the angle between the legs, while at the same time the hands compress the chest, so as to lessen its size and raise the diaphragm. The body is then brought back into the horizontal position. The thorax is seen to expand, causing a marked inspiratory movement. These movements should be repeated at about the normal rate of respiration in the newborn. In performing these movements a towel rolled up and placed upon the child's back for the accoucheur's thumbs to rest upon during the second movement will render it more easy to observe the beginning of respiration and see that the child's mouth and pharynx are free from mucus. The author reports he has not known a failure of this method in two years' trial. Even pronounced cases respond promptly.

Traumatic Effects of Labor on the Child. Among the injuries to the child during labor Finkelstein³ discusses *hæmatoma* and *cerebral bleeding*. He describes two forms of hæmatoma—an external and an internal. In the external form the effusion never extends beyond a suture or a fontanelle. As it takes place between the periosteum and the bone, where the periosteum is loosely attached, it is limited by the

¹ Centralblatt f. Gynäk., June 7, 1902.

² Semaine médicale, 1902, No. 45.

³ Berliner Klinik, June, 1902.

periosteal attachment at its circumference. It is a soft swelling which has a hardened circumference, and gives the impression at times that there is a hole in the bone in the centre. It is painless, and at times attains a considerable size. It is most frequently found on the right parietal bone, then the left, the occipital, frontal, and temporal areas being more rarely affected. It is not always due to a hard labor, for in some instances it is observed in those which have been quite easy. Here it is supposed to be due to the rubbing back and forth of the loose scalp which has loosened the periosteum from the bone. The internal form occurs as an epidural hemorrhage, and is frequently associated with the external. Concerning cerebral bleeding, the writer says, when a newborn infant presents a marked degree of asphyxia after a normal birth without apparent cause, and which will not disappear after appropriate treatment, you should think of cerebral hemorrhage. The symptoms are sopor, shallow respiration, more rarely bradycardia, increased tension of the fontanelles, strabismus, and miosis. Hemiplegia and convulsions are common, but none of these symptoms are constant. The writer says in some cases a lumbar puncture may help clear up the diagnosis. The seat of the hemorrhage is usually subdural or subarachnoid, though at times it is found on the surface of the cerebellum or at the base. In the majority of cases the writer believes the prognosis is good, and that one may expect a complete recovery.

Gastrointestinal Hemorrhage of the Newborn Infant. The obscurity in the etiology of this disease makes its study and investigation of great interest. Moran¹ says that gastrointestinal hemorrhage of the newborn is less frequent than at any period of life. Its mortality is over 50 per cent. It rarely lasts over forty-eight hours in those cases that recover. The writer divides the hemorrhages of infancy into three classes: 1. Those occurring shortly after birth. 2. Those dependent upon some pathological condition of the blood or bloodvessels, and usually associated with purpura hæmorrhagica, hæmophilia, and eruptive fevers. 3. Those due to local causes, as ulceration in typhoid, severe intestinal inflammation, mechanical irritation, lumbrici, etc. He reviews much of the literature upon the etiology, and then points out that the etiology is by no means settled, and is in many cases conjectural. Its self-limitation, however, would seem to show that the cause is transitory and that obstruction of the circulation and interference with complete respiration are important factors, and that bacterial infection plays but a secondary rôle. Hæmatemesis is in many instances the first indication of the disease, usually occurring during the first four days, and is followed by a hemorrhage from the bowels; fever

¹ American Gynecology, November, 1902.

may or may not be present. Intestinal hemorrhage is more frequently met with, and its source is the duodenum and jejunum. The blood is dark, of tarry consistence, owing to the action of the intestinal juices, and does not clot because of the admixture of mucus.

Umbilical hemorrhage is sometimes associated with melæna, likewise hemorrhage from the nose and mouth and integument, but these are probably due to an inherited dyscrasia. A typical case offers little difficulty in diagnosis. The pallor, rapid and thready pulse, shallow and sighing respiration, prostration, and the presence of hemorrhage give a picture which is easily recognized. It is sometimes difficult of detection, however, for hemorrhage may take place and the infant succumb before the blood is evacuated from the bowel, disclosing the true nature of the disease. Gastrointestinal hemorrhage in the newborn is self-limited, and recovery is complete when it takes place.

Melæna occurs in about equal proportions in males and females, while hæmophilia preponderates 13 to 1 in males.

Treatment should aim to control hemorrhage, maintain the forces, and remove the cause. Astringents injected into the bowel are contraindicated. Salt solution may be given by the rectum, but is not likely to be retained. In the severe cases inhalation of oxygen and ether hypodermically have been used; likewise free stimulation, the subcutaneous injection of artificial serum, and normal salt solution alone or combined with gelatin have proved valuable adjuvants in the treatment. Subsequently tonics to overcome anæmia and appropriate medication should there be any constitutional taint. The writer reports a case successfully treated by injecting the gelatin and salt solution subcutaneously, about four ounces of each, under each breast. The response was prompt and gratifying, and the patient made an uninterrupted recovery.

INDEX.

- A** **BDOMINAL** aortitis, 54
 Abortion, recurrent, 302
 Abscess, bronchiectatic, 40
 treatment of, 40
 mammary, prevention of, 365
 of medulla oblongata, 209
 of pons, 209
 subphrenic, 37
 Acetate of lead neuritis, 268
 Acne, 109, 115, 158
 treatment of, 109
 Aconite and digitalis, 89
 for hæmoptysis, 27
 Actinomycosis of the skin, 116
 Actinotherapeutic action, 111
 general considerations on, 112
 results of, 113
 tissue changes in, 113
 Actinotherapy, 110
 apparatus for, 111
 in acne, 115
 in alopecia areata, 114
 in burns, 116
 in cancer, 115
 in eczema, 116
 in epithelioma, 115
 in favus, 116
 in lupus erythematosus, 115
 vulgaris, 113
 in nævus, 114
 in parasitic diseases, 116
 in pityriasis versicolor, 116
 in psoriasis, 116
 in rhinophyma, 116
 in ringworm, 116
 in rodent ulcer, 115
 in rosacea, 115
 in syccosis, 116
 in telangiectasis, 114
 in tuberculosis cutis, 114
 in ulcer tropicum, 116
 in wounds, 116
 theory of, 111
 Adams-Stokes' disease, 96
 Addison's disease, 88
 Adherent pericardium, 63
 Adiposis dolorosa, 278
 involvement of joints in, 278
 Adrenalin, intravenous use of, 87
 in Addison's disease, 88
 in Graves' disease, 88
 Affections of bronchi, 41
 of pleura, 30
 Agglutination, post-rheumatic, 64
 Air emboli, 86
 Air-passages, foreign bodies in, 41
 Akathisia, 272
 Albuminuria in pregnancy, 324
 Alcoholic neuritis, 266
 Alopecia, 117
 areata, 114
 infantile, 118
 treatment of, 119
 Amaurosis and pregnancy, 325
 Amaurotic family idiocy, 208
 Amyotrophic lateral sclerosis, 250
 Anæmia, pernicious, in pregnancy, 325
 Anæsthetics in relation to status lymph-
 aticus and enlarged thyroid, 107
 Anatomy of Glénard's disease, 29
 Aneurism, 59
 aortic, etiology of, 59
 arteriovenous, of subclavian artery,
 59
 gelatin in, 61
 in relation to aortic hypoplasia, 54
 of heart, 61
 of valve, 61
 radical cure of, 62
 rupture of, into vena cava, 61
 thoracic, 59
 diagnosis of, 59
 fluoroscope in, 60
 humming-top murmur in, 59
 inspection in, 60
 notes on, 59
 pulsation in the chest in, 60
 rhythmic jerking of head in, 61
 treatment of, 61
 Aneurismal angina, aortic, 103
 coronary angina, 103
 Aneurisms, cerebral, 262
 Angina, 100
 aneurismal coronary, 103
 aortic aneurismal, 103
 compound, 104
 coronary obstruction in, 101
 diagnosis of, 104
 endocardial, 103
 hysterical, 101
 musculospasmodic, 102
 nature of, 101
 nervous theories of, 103
 neuralgic, 103
 neuritic, 103
 pectoris, 100
 prognosis of, 104
 pseudogastric, 100
 sine dolore, 104
 valvular, 103

- Angina, vasomotor, 104
 Angioneurotic edema, 279
 Anisocoria and the diagnosis of aneurism, 59
 Anthrax, 119
 Antiseptics, injection of, in empyema, 39
 Aorta, depressor nerve of, 93
 in tabes, 54
 narrow, 53
 pulsation of, 54
 sclerosis of, 54
 stenosis of, 53
 traumatic rupture of, 54
 Aortic aneurism, 59
 rupture of, into vena cava, 61
 aneurismal angina, 103
 hypoplasia, aneurism in relation to, 54
 regurgitation, 72
 stenosis, 71
 system, congenital narrowness of, 53
 valvular defects, 74
 Aortitis, abdominal, 54
 acute, 103
 syphilitic, 54
 Aphasia, 191
 hereditary, 194
 in pregnancy, 191
 in the puerperium, 191
 pure sensory, 193
 sensory, 192
 Apomorphine in eclampsia, 337
 Apoplexy and syphilis, 172
 Appendicitis and extra-uterine pregnancy, 308
 and pregnancy, 324
 Argyll-Robertson pupil, 226
 Arrhythmia, cardiac, 98
 in influenza, 99
 Arrhenal in phthisis, 27
 Arsenic, iodide of, for bronchitis, 46
 subcutaneous injection of, in phthisis, 25
 Arsenical neuritis, 267
 Arterial blood pressure, 56
 clinical value of, 56
 rise of, in later life, 56
 overpressure, senile, 57
 Arteriosclerosis, 55
 and epilepsy, 275
 etiology of, 55
 in the young, 254
 of spinal cord, 253
 treatment of, 56
 Trunccek's serum in, 56
 visceral, 55
 Arteriovenous aneurism, 59
 Arthritis in infantile bronchopneumonia, 43
 Arthropathies in tabes, 227
 Asphyxia neonatorum, 381
 Astercognosis, 183, 198
 Asthma, 48
 and pregnancy, 324
 diet in, 51
 drug treatment of, 51
 etiology of, 49
 Asthma, nasal treatment of, 50
 pathology of, 49
 Asynergy, cerebellar, 232
 Ataxia, 231
 acute, 232
 and disseminated sclerosis, 237
 due to typhoid fever, 232
 infectious diseases a cause of, 232
 locomotor. *See* Tabes.
 Atrophy, muscular, in tabes, 228
 of skin, 119
 progressive spinal muscular, 237
 and neuritis, 270
 Atropine in torticollis, 281
 Auricle, rupture of, 106
 Auriculoventricular orifice, occlusion of, 70
 Auscultation rod, 29
BALNEOLOGICAL treatment of heart disease, 89
 Basiotribe, Tarnier's, 362
 Baths, peat, 89
 electric, 90
 Biliary colic in pregnancy, 324
 Blastomycosis, 122
 Blood count, cervical venous hum and, 68
 leprosy bacilli in, 145
 pressure, arterial, 56
 clinical value of, 56
 rise of in later life, 56
 Bloodvessels, 53
 and syphilis, 172
 influence of cerebral activity on, 94
 physical overstrain and, 76
 Bossi's dilator, 341
 Brachial plexus palsy, 265
 Bradycardia, 96
 paroxysmal, 96
 Brain, concussion of, 203
 diseases of, 179
 gumma of, 182
 hemiplegia from lesions at base of, 201
 hemorrhage into, 236, 382
 injuries to, 202
 tumor, 179
 dental engine for, 184
 myxedema a sign of, 184
 osteoplastic method for, 183
 paralysis of conjugate movement in, 189
 Roentgen rays in, 182
 Breasts, abscess of, prevention of, 365
 hypertrophy of, in pregnancy, 326
 massage of, 367
 Breech extraction, 349
 Bromine eruptions, 124
 Bromocoll, 153
 Bromoderma, 124
 Bronchi, affections of, 41
 treatment of, 41
 Bronchiectatic abscess, 40
 treatment of, 40
 Bronchitis, 41, 44, 324
 among firemen, 43

- Bronchitis and pregnancy, 324
 capillary, 41
 due to smoke, 43
 fibrosa, 43
 gas and, 43
 germicidal inhalations for, 44
 inhalation, 43
 iodide of arsenic for, 46
 malarial, 44
 oxygen for, 46
 respiratory gymnastics for, 46
 special forms of, 43
 staphylococcus, 43
 streptococcus, 43
 treatment of, 44
 Wassmuth's apparatus for, 44
- Bronchopneumonia, 41
 infantile, 42
 arthritis in, 43
- Bubo, 124
- Bulbar palsy, 211, 250
- Burns and wounds, 116
- CACODYLATE** of sodium in phthisis, 26
- Cæsarean section, 358
 post-mortem, 359
- Calcification of skin, 127
 of ventricle, 64
- Calcium chloride for hæmoptysis, 27
- Camphor as a cardiac stimulant, 89
- Cancer. *See* Carcinoma.
- Capillary bronchitis, 41
- Carbolic acid neuritis, 268
- Carbon monoxide poisoning, hemiplegia from, 199
- Carbuncle, 125
- Carcinoma, 115, 159
 and epithelioma, 126
 and syphilis, 172
 and tuberculosis, 85
 cutaneous, 127
 rectal, in pregnancy, 312
 uteri, in pregnancy, 325
- Cardiac arrhythmia, 98
 in influenza, 99
 bruit as a neurosis, 67
 compensation, 73
 failure of, 73
 dilatation in puberty, 74
 dyspnoea, 52
 inadequacy, 74
 pain, 102
- Cardiopulmonary murmurs, 68
- Caries, spinal, 250
- Catarrh, treatment of, 44
- Catolytic action of intravenous injections, 83
- Centre, stereognostic perception, 183, 198
- Centres for cutaneous sensibility, 183
 for muscular sensibility, 183
- Cerebellar asynergy, 232
 origin of hemiplegia, 200
- Cerebral activity, influence of, in heart and bloodvessels, 94
- Cerebral aneurisms, 262
 bleeding, 236, 382
 circulation, 94
 dura, gumma of, 184
 paralysis, infantile, with pseudo-hypertrophy, 207
 tumors, 179
 and pregnancy, 323
- Cervical venous hum and the blood count, 68
- Cervicitis in pregnancy, 309
- Cervix, œdema of, in pregnancy, 310
- Chaulmoogra oil in leprosy, 145
- Chest pantograph, 29
- Child, traumatic effects of labor on, 382
- Children, disseminated sclerosis in, 245
 hemorrhage into brain in, 236
 into spinal cord in, 236
 essential or toxic dropsy in, 58
- Chloral hydrate in eclampsia, 337
- Chloride of sodium in epilepsy, 277
- Cholecystitis in pregnancy, 376
- Cholecystotomy after labor, 376
- Chorea, 280
 and epilepsy, 277
 and pregnancy, 323
 mollis, 280
 Morvan's, 282
 paralytica, 280
 spasm of eyelids in, 280
- Chromidrosis, 128
- Chvostek's sign, 216
- Circumcision, syphilis and, 164
- Cleavage of second sound of the heart, 67
- Compensation, cardiac failure of, 73
 limited, 73
- Complications of pregnancy, 308
- Concussion of brain, 203
- Congenital affections of heart, 69
 nuclear disease, 259
 pulmonary stenosis, 69
- Conjugate movement, paralysis of, 189
- Constipation a cause of eclampsia, 332
- Contagion of syphilis, 169
- Contracted pelvis, 350
 version in, 350
- Contractures in hemiplegia, 199
- Conus terminalis, lesions of, 239
- Cornea mandibular reflex, 216
- Cornu cutaneum, 128
- Coronary angina, aneurismal, 103
 obstruction in angina, 101
- Corpora quadrigemina, tumor of, 187
- Corpus callosum, lipoma of, 186
- Corrosive sublimate, intravenous injection of, 84
 in rheumatism, 84
 neuritis, 268
- Craniotomy, 360, 363
 Tarnier's basiotribe for, 362
- Cutaneous sensibility, centre for, 183
- Cyon and Ludwig's depressor nerve of aorta, 93
- Cytoscopy, 30

DEATH, sudden, 105
 in cases of enlarged thymus, 107
 in infants, 106

Deciduitis, 297
 acute, 297
 chronic, 298
 catarrhal, 298
 cystic, 298
 diffuse hyperplastic, 298
 exanthematous, 297
 hemorrhagic, 297
 infectious, 297
 polypoid, 298
 purulent, 297

Deciduoma malignum, 300

Dementia and syphilis, 172

Dental engine for brain tumor, 184

Depressor labii inferioris phenomenon, 216
 nerve of aorta, 93

Dermatology and syphilis, 109

Dermatomyositis, 130

Dermoid cyst and pregnancy, 325

Diabetes and pregnancy, 325
 and psoriasis, 156

Diabetic skin diseases, 132

Diaphragm, 28

Diet in asthma, 51
 in epilepsy, 278
 in pregnancy, 289

Digestive tract in pregnancy, 324

Digitalis, aconite and, 89
 administration of, 78

Dilatation, cardiac, in puberty, 74
 gastric, 18

Dilator, Bossi's, 341

Diphtheria a cause of noma, 152
 optic neuritis in, 261

Diphtheritic endocarditis, 79

Diplegia, facial, 258

Diseases, functional nervous, 272
 of brain, 179
 of digestive tract in pregnancy, 324
 of eye in pregnancy, 323
 of muscles, 285
 of nerves, 257
 of nervous system, 179
 of skin, 109
 in pregnancy, 323
 of spinal cord, 219
 of thorax and its viscera, 17

Dispensaries for phthisis, 21

Disseminated sclerosis, 232, 245
 in children, 245

Dropsies, 58

Dropsy, essential in children, 58
 toxemic, in children, 58

Drug poisoning in pregnancy, 325

Dubini's disease, 282

Ductus arteriosus, persistence of, 69, 70

Dyes, hair, 138

Dyspnea, cardiac, 52

Dystrophy, progressive muscular, 285

ECLAMPSIA, 327
 and pregnancy, 325
 and the kidneys, 330

Eclampsia, apomorphine in, 337
 chloral hydrate in, 337
 constipation a cause of, 332
 etiology of, 327
 fetal theory of, 329
 pathology of, 334
 placental theory of, 328
 pneumococcus meningitis simulating,
 335
 spinal injection of tropococaine in,
 338
 thyroid extract in, 332
 inadequacy a cause of, 332
 treatment of, 336

Ectopic gestation, 304
 and appendicitis, 308
 rupture of, 308
 vaginal operation for, 307

Eczema, 116, 133, 158
 and syphilis, 167

Effusion, pleural, 34
 containing fat, 34
 method of evacuating, 36
 physical signs of, 34
 pressure of, 35
 treatment of, 35

Elastic bags, vaginal use of, 340
 tissue in lung, 28
 in emphysema, 28

Electric baths, 90

Electricity, effects of, 211

Emboli, air, 86

Embolc pleurisy, 33

Emphysema, elastic tissue in, 28
 surgical, 17

Empyema, 37
 and pregnancy, 324
 clinical study of, 37
 drainage without incision, 39
 tubes, 39
 etiology of, 38
 in infants, 38
 injections of antiseptics for, 39
 latency of, 38
 medicinal treatment of, 38
 pneumococcus in, 38
 postoperative treatment of, 39
 sarcoma of lung and, 40
 staphylococcus in, 38
 streptococcus in, 38
 surgical treatment of, 38
 thoracoplasty in, 40

Encephalitis, 206

Endermic medication, 24

Endocardial angina, 103

Endocarditis, acute, 78
 benign, 78
 chronic, 70
 diphtheritic, 79
 gonorrhoeal, 80
 injection of silver salts for, 81
 malignant, 78, 81
 non-septic malignant, 78
 pneumococcus, 79
 prognosis of, 80
 pyocyaneus, 78

Endocarditis, rheumatic, 78, 82
 septic, 78, 81
 serum treatment for, 81
 treatment of, 81
 tuberculosis, 80
 Endocervicitis in pregnancy, 309
 Endotheliomata of pleura, 31
 Enteric fever. *See* Typhoid fever.
 Eosinophilic pleuritis, 33
 Epidemic cedema, 58
 Epidermolysis bullosa, 134
 Epilepsy, 275
 arteriosclerosis and, 275
 chloride of sodium in, 277
 chorea and, 277
 diet in, 278
 fecal vomiting in, 275
 heart disease and, 275
 in pregnancy, 323
 myoclonus, 276
 reflex, 275
 treatment of, 277
 Epithelioma, 115, 159
 and carcinoma, 126
 Erysipelas, 136
 in negroes, 136
 Essential dropsy in children, 58
 Etiology of aortic aneurism, 59
 of arteriosclerosis, 55
 of asthma, 49
 of eclampsia, 327
 of empyema, 38
 Exercise, evils of, in heart disease, 90
 in pulmonary tuberculosis, 19
 Exertion and the heart, 77
 prolonged, effects of, 77
 pulse rate in, 78
 Exophthalmic goitre, 88
 in pregnancy, 325
 Extra-uterine pregnancy, 304
 and appendicitis, 308
 rupture of, 308
 vaginal operation for, 307
 Eye, diseases of, in pregnancy, 323
 lids, spasm of, in chorea, 200

FACE presentations, 347
 Facial diplegia, 258
 palsy, 257
 peripheral, 215
 reaction of degeneration in, 257
 rheumatic, 257
 spasm, 284
 Facies of the Sphinx, 285
 Family idiocy, amaurotic, 208
 periodic paralysis, 280
 Fat in pleural effusions, 34
 Favus, 116, 159
 Fecal vomiting in epilepsy, 275
 Feeding, forced, in pulmonary tuberculosis, 18
 Fetal theory of eclampsia, 329
 Fibroids, uterine, in pregnancy, 313
 Fibromata, multiple, of a nerve, 260
 Firemen, bronchitis among, 43

Flaccid paraplegia, 241
 Flat pelvis, 353
 Fleshy mole of pregnancy, 298
 Fluoroscope in thoracic aneurism, 60
 Forced bleeding in phthisis, 18
 Forceps, obstetrical, 356
 for transverse positions of head, 353
 Tarnier's, 357
 Forehead presentations, 347
 Foreign bodies in the air passages, 41
 Formalin, intravenous injections of, 83, 367-371
 neuritis, 268
 Fracture of base of skull, 204
 of spine, 251
 Frontal lobe, tumors of, 185
 "Frosted heart," 63
 Functional affections of heart, 91
 nervous diseases, 272

GANGRENE, pulmonary, 53
 Gas injections into veins, 86
 Gasserian ganglion, 263, 264
 Gastric dilatation in phthisis, 18
 Gastrointestinal hemorrhage in the newborn, 383
 Gelatin, germ-free, 62
 in aneurism, 61
 injections for hæmoptysis, 27
 Geosote in phthisis, 26
 Germ-free gelatin, 62
 Germicidal inhalations for bronchitis, 44
 Gestation, ectopic, 304
 and appendicitis, 308
 rupture of, 308
 vaginal operation for, 307
 Gestational paralysis, 377
 Glénard's disease, anatomy of, 29
 Glossopharyngeal nerves, paralysis of, 252
 Gloves, rubber, in obstetrics, 340
 Gonorrhœa and endocarditis, 80
 in ectopic pregnancy, 304
 Graves' disease, 88
 in pregnancy, 327
 Guaiacol, valerianate of, 26
 Gumma of brain, 182
 of cerebral dura, 184

HÆMATOMA from labor, 382
 Hæmatomyelia and nerve injury, 237
 Hæmaturia in pregnancy, 311, 325
 Hæmoglobinuria in pregnancy, 325
 Hæmoptysis in phthisis, 27
 aconite for, 27
 calcium chloride for, 27
 gelatin in, 27
 treatment of, 27
 Hair dyes, 138
 Hay fever, 46
 pathology of, 46
 treatment of, 46
 Head, transverse positions of, 353
 treatment of after-coming, 349
 Heart, 66

- Heart, abnormal mobility of, 91
 aconite in diseases of, 89
 and aorta in tabes, 54
 and valves, effects of strain on, 76
 aneurism of, 61
 arrhythmia of, 98, 99
 camphor in diseases of, 89
 compensation, 73
 congenital affections of, 69
 digitalis in diseases of, 88
 dilatation of, 74
 in puberty, 74
 disease, balneological treatment of, 89
 electric baths for, 90
 evils of exercise in, 90
 hydrotherapy in, 90
 in epilepsy, 285
 in pregnancy, 324
 peat baths for, 89
 physical methods in treatment of, 90
 rest treatment for, 90
 weight in, 91
 effects of exertion on, 77
 failure of compensation, 73
 frosted, 63
 functional affections of, 91
 hemisystole of, 99
 inadequacy of, 74
 influence of cerebral activity on, 94
 in pregnancy, 75
 irregularity in influenza, 99
 massage of, 103
 motor insufficiency of, 73
 murmurs of, 68
 needle in wall of, 105
 nervous affections of, 96
 system and, 92
 neurasthenia, 92
 pain, 102
 physical examination of, 66
 overstrain and, 76
 pneumogastric nerve and, 92
 reduplication of sounds of, 66, 67
 right border of, 66
 rupture of, 105
 sudden death and the, 105
 valvular affections of, 70
 vasomotor centres of, 93
 nerves of, 93
 Hemianæsthesia in hemiplegia, 195
 Hemiplegia, 195
 carbon monoxide poisoning and, 199
 contractures in, 199
 from lesions at base of brain, 201
 hemianæsthesia in, 195
 in pregnancy, 323
 in the young, 199
 of cerebellar origin, 200
 sensory changes in, 198
 Hemiscotoma, 279
 Hemisystole of heart, 99
 Hemorrhage into brain, 236
 into spinal cord, 236
 post-partum, 316
 secondary puerperal, 317
 Hemorrhagic pachymeningitis, spinal, 252
 Hepatic area, venous hum over, 69
 tumors in pregnancy, 324
 Hereditary aphasia, 194
 Histology of the placenta, 296
 Humming-top murmur, 59
 Hydatid of the pleura, 32
 Hydrocephalus, internal, 208
 Hydrofluoric acid neuritis, 267, 268
 Hydrophobia. *See* Rabies.
 Hydrorrhœa gravidarum, 297
 Hydrotherapy, 90
 Hyperæsthesia of nails in hysteria, 273
 in neurasthenia, 273
 Hyperemesis in pregnancy, 324
 Hyperpyrexia in influenza, 44
 Hypertrichosis, 159
 Hypomycetic granuloma, 137
 Hysterectomy for puerperal sepsis, 373
 Hysteria, 272, 316
 hyperæsthesia of nails in, 273
 in pregnancy, 323
 tubular vision in, 273
 Hysterical angina pectoris, 101
 tachypnoea, 52
 ICHTHYOL in phthisis, 26
 Icterus gravis in pregnancy, 324
 Idiocy, amaurotic family, 208
 Incubation period of syphilis, 168
 Infant, newborn, 380
 gastrointestinal hemorrhage in, 383
 Infantile alopecia, 118
 cerebral paralysis with pseudohypertrophy, 207
 Infants, bronchopneumonia in, 42
 arthritis in, 43
 treatment of, 42
 latency of empyema in, 38
 sudden death in, 106
 Infection, prevention of, in obstetrics, 340
 puerperal, 367-371
 streptococcus, 367-371
 Infectious diseases and ataxia, 232
 pleurisy, 33
 Influenza, 44
 cardiac irregularity in, 99
 hyperpyrexia in, 44
 in pregnancy, 325
 nervous system in, 44
 Inhalation bronchitis, 43
 Injuries to the brain, 202
 Inoscopy, 31
 Insane, sanatoria for the tuberculous, 22
 Instrumental aids to diagnosis, 29
 Intention spasm, 284
 Interpeduncular space, tumor in, 180
 Interruption of pregnancy, indications for, 323
 in phthisical working women, 326
 Intestinal obstruction, peritonitis mistaken for, 314
 Intramuscular injections of sodium cinna-
 mate, 25

Intratracheal medication in phthisis, 28
Intravenous injections, catalytic action of,
 83
 dangers of, 85
 in rheumatism, 84
 in streptococcus infection, 83,
 367-371
 in syphilis, 176
 of adrenalin, 87
 of corrosive sublimate, 84
 of formalin, 83, 367-371
 of sodium cinamate, 25
 therapeutics, 82, 367
Involuntary movements in tabes, 226
Iodide of arsenic in bronchitis, 46
Itching in syphilis, 167

J **JOINTS**, involvement of, in adiposis
 dolorosa, 278
 in bronchopneumonia, 42
 in tabes, 227

K **KELOID**, 143
 Keratosi, 139, 159
Kidney of pregnancy, 330
Kraurosis ani, 142

L **LABOR**, cholecystotomy after, 376
 hæmatoma from, 382
 management of, 344
 mechanism of, in transverse position
 of head, 353
 traumatic effects of, on child's head,
 382

Lacrimal reflex, 215
Landry's paralysis, 256
Laryngitis, tuberculous, in pregnancy, 308
Larynx, tuberculosis of, 323
Lateral sclerosis, amyotrophic, 250
Lead acetate neuritis, 268
Lepra anæsthetica, 146
 tuberosum, 144
Leprosy, 143, 159
 and syringomyelia, 236
 bacilli in blood, 145
 chaulmoogra oil in, 145
 tuberculous, 145

Leukæmia and pregnancy, 325
Leucoplakia, 148
Lichen, 159
Ligation of umbilical cord, 380
Light treatment of phthisis, 24
Limbs, enlargement of, after neuritis, 265
Lipoma of corpus callosum, 186
Liver, venous hum over, 69
Local panatrophs, 287
Locomotor ataxia, 54, 220
 aorta in, 54
 Argyll-Robertson pupil in, 226
 arthropathies in, 227
 early signs of, 224
 heart in, 54
 involuntary movements in, 226
 multiple neuritis and, 231

Locomotor ataxia, muscular atrophy in,
 228
 optic atrophy in, 221
 pseudo-, 230
 slowness of respiration in, 227
 statistics on, 220, 223
 symptoms of, 221, 223
 syphilis and, 221
Ludwig and Cyon's depressor nerve of
 aorta, 93
Lung, elastic tissue in, 28
 sarcoma of, 40
Lungs and thorax, physical examination
 of, 28
 pneumogastric nerves and, 92
Lupus erythematosus, 115, 149, 158
 vulgaris, 113, 158
Lymphocytes in tuberculous exudates, 31

M **MALAR** phenomenon, 216
 Malaria in pregnancy, 325
Malarial bronchitis, 44
Malignant endocarditis, 81
 serum treatment of, 81
Mammæ, hypertrophy of, 326
Management of abnormal presentations
 and positions, 344
 forehead presentations, 347
 of face presentations, 347
 of mentoposterior positions, 349
 of transverse positions of head, 353
Marriage and syphilis, 169
Massage of breasts, 367
 of heart, 107
Mechanical pleurisy, 33
Mechanism of abnormal presentations and
 positions, 344
 of face presentations, 347
 of forehead presentations, 347
 of transverse positions of head, 353
Mediastinopericarditis, 55
Medulla oblongata, abscess of, 209
Melæna, 384
Meningitis, 212
 in pregnancy, 378
 pneumococcus, simulating eclampsia,
 335
 syphilitic, 378
 tuberculous, 212
Meningomyelitis, syphilitic, 233
Mental symptoms in phthisis, 18
Mentoposterior positions, 349
 rest in, 349
 strychnine, 349
Meralgia, paræsthetic, 271
Micro-organisms, passage of, through pla-
 centa, 296
Migraine, 279
Miliary tuberculosis in pregnancy, 323
Mitral regurgitation, 73
 stenosis, 70, 73
 in pregnancy, 324
 presystolic murmur of, 68
 valve, muscular insufficiency of, 72
Morton's disease in pregnancy, 315
Morvan's chorea, 282

- Morvan's disease and syringomyelia, 236
 Mucous patches in syphilis, 166
 Mumps. *See* Parotitis.
 Murmur, presystolic, of mitral stenosis, 68
 vesicular, 28
 Murmurs, mechanism of cardiopulmonary, 68
 Muscles, diseases of, 285
 Muscular atrophy in tabes, 228
 dystrophy, progressive, 285
 insufficiency of mitral valve, 72
 sensibility, centre for, 183
 spasms, 282
 Musculospasmodic angina, 102
 Myæsthenia gravis, 279
 and angioneurotic œdema, 279
 Mycosis fungoides, 150, 159
 Myelitis, 247
 recurrent, in the puerperium, 379
 tuberculous, 247
 Myocarditis, rheumatic, 75
 Myocardium, 74
 Myoclonia, 283
 Myoclonus epilepsy, 276
 fibrillaris multiplex, 284
 multiplex, 284
 Myofibrosis cordis and uterine myoma, 75
 Myokamia, 283
 Myoma, uterine, and myofibrosis, 75
 Myomata in pregnancy, 325
 Myospasm, 282, 284
 Myotonia acquisita, 284
 Myœdema a sign of brain tumor, 184
- NÆVUS**, 114, 151, 159
 Nails, finger, hyperæsthesia of, 273
 Needle in the heart wall, 105
 Negro, erysipelas in, 136
 Neoplasms of the pleura, 31
 Nephritis in pregnancy, 324
 Nerve, depressor, of aorta, 93
 fibromata of, 260
 injury and hæmatomyelia, 237
 pneumogastric, 92, 262
 tumors, 259
 Nerves, diseases of, 257
 glossopharyngeal, paralysis of, 262
 pneumogastric, paralysis of, 262
 regeneration of, 268
 spinal localization of, 269
 Nervous affections of the heart, 96
 system and influenza, 44
 diseases of, 179
 heart and, 92
 theories of angina, 103
 Neurasthenia cordis, 92
 Neuralgic angina, 103
 Neuritic angina, 103
 Neuritis, 266
 alcoholic, 266
 arsenical, 267
 enlargement of limbs after, 265
 experimental, 268
 following labor, 377
 from acetate of lead, 268
 from carbolic acid, 268
 Neuritis from corrosive sublimate, 268
 from formalin, 268
 from hydrofluoric acid, 267, 268
 multiple, 231
 optic, in diphtheria, 261
 progressive spinal muscular atrophy
 and, 270
 toxic, 266
 typhoid fever and, 265
 Neurasthenia, hyperæsthesia of nails in, 273
 Neurofibromatosis, 259
 Neurosis, cardiac bruit as a, 67
 Newborn infant, 380
 gastrointestinal bleeding in, 383
 Noma, 152
 due to diphtheria, 152
 Nuclear disease, congenital, 259
- O**BESITY in pregnancy, 291
 Obsessions, 274
 Obstetric forceps, 356
 surgery, 340
 Obstetrics, 289
 rubber gloves in, 340
 Occipitoposterior positions, 345
 rest in, 349
 strychnine in, 349
 Oculomotor palsy, 361
 Œdema, epidemic, 58
 of cervix in pregnancy, 310
 Open-air treatment of syphilis, 23
 of tuberculosis, 20
 Ophthalmic reflex, 215
 Optic neuritis in diphtheria, 261
 Organism of syphilis, 170
 Osteomalacia, 325
 Osteoplastic operation for brain tumor,
 183
 Oxygen inhalations for bronchitis, 46
 injections into veins, 86
- P**ACHYMEINGITIS, spinal, exter-
 nal, 214
 hemorrhagic, 252
 Pain from visceral lesions, 271
 in testicle, 272
 stomach, 271
 thoracic, 29
 Palsy, brachial plexus, 265
 bulbar, 211, 250
 facial, 257
 reaction of degeneration in, 257
 rheumatic, 257
 oculomotor, 261
 peripheral facial, 215
 Panatrophly, local, 287
 Pantograph, chest, 29
 Paracentesis of pericardium, 64
 of ventricle, 65
 Paradoxical pupillary reflexes, 219
 Paræsthetic neuralgia, 271
 Paralysis, family periodic, 280
 gestational, 377
 infantile cerebral, with pseudohyper-
 trophy, 207

- Paralysis, Landry's, 256
 of conjugate movement, 189
 of pneumogastric nerve, 262
 of vagus nerves, 262
 puerperal, 377
 spastic spinal, 240
- Paraplegia, flaccid, 241
- Parasitic skin diseases, 116, 159
- Parotitis and pregnancy, 325
- Pathology of asthma, 49
 of deciduoma malignum, 300
 of eclampsia, 334
 of hay fever, 46
 of tic douloureux, 264
- Peat baths for heart disease, 89
- Pelves, contracted, 350
 flat, 353
- Pelvimetry, 350
- Pelvis, transverse positions of head in, 353
- Percussion, tidal, 29
- Perforation of head, 360, 363
 and version, 363
- Pericarditis, 62
 purulent, 63
 rheumatic, 63
 tuberculous, 63
 varieties of, 62
- Pericardium, 62
 adherent, 63
 drainage of, 65
 paracentesis of, 64
- Periodic paralysis, family, 280
- Peripheral facial palsy, 215
- Peritonitis in pregnancy, 314
 mistaken for intestinal obstruction, 314
 pain in, 271
- Pertussis and pregnancy, 325
- Phthisis. *See* Pulmonary tuberculosis.
- Physical examination of heart, 66
 of lungs and thorax, 28
 exertion and the heart, 77
 methods in cardiac treatment, 90
 overstrain and the bloodvessels, 76
 and the heart, 77
- Pia, sarcoma of, 185
- Pityriasis versicolor, 116
- Placenta, 296
 and decidua, 246
 histology of, 246
 passage of micro-organisms through, 297
 prævia, 319-323
- Placental theory of eclampsia, 328
- Pleura, 30
 endothelioma of, 31
 hydatid of, 32
 neoplasms of, 31
- Pleural effusions, 34
 containing fat, 34
 evacuation of, 36
 physical signs of, 34
 pressure in, 35
 treatment of, 35
- Pleurisy, 32
 classification of, 33
 clinical varieties of, 33
- Pleurisy, embolic, 33
 eosinophilic, 33
 infectious, 33
 lymphocytes in, 31
 mechanical, 33
 pregnancy and, 323
 serous, 33
 tuberculous, 31, 33
 typhoid, 33
- Pneumococcus endocarditis, 79
 in empyema, 38
 meningitis and eclampsia, 335
- Pneumogastric nerve and heart, 92
 and lungs, 92
 paralysis of, 262
- Pneumomycosis, 44
- Pneumonia and pregnancy, arthritis in, 43
 infantile, 42
- Pneumothorax and pregnancy, 324
 spontaneous, 32
- Polioencephalomyelitis, 249
- Poliomyelitis, 248
- Polyhydramnios, 299
- Polyneuritis gravidarum, 323
- Pons, abscess of, 209
- Posterior positions, mechanism of, 344
- Posterolateral sclerosis, 239
- Post-mortem Cæsarean section, 359
- Post-partum hemorrhage, 316
- Post-rheumatic agglutination, 64
- Presystolic murmur of mitral stenosis, 68
- Pregnancy, 289
 and albuminuria, 324
 and amaurosis, 325
 and anæmia, pernicious, 325
 and appendicitis, 324
 and asthma, 324
 and biliary colic, 324
 and bronchitis, 324
 and carcinoma uteri, 325
 and cerebral tumors, 323
 and cervicitis, 309
 and cholecystitis, 376
 and chorea, 323
 and dermoid cyst, 325
 and diabetes, 325
 and diseases of digestive tract, 324
 of eye, 323
 of skin, 323
 and drug poisoning, 325
 and eclampsia, 325
 and emphysema, 324
 and endocervicitis, 309
 and epilepsy, 323
 and exophthalmic goitre, 325
 and fibroids, 313
 and Graves' disease, 325
 and hæmaturia, 311, 325
 and hæmoglobinuria, 325
 and heart disease, 324
 and hemiplegia, 323
 and hepatic lesions, 324
 and hyperemesia, 324
 and hypertrophy of mammae, 326
 and hysteria, 316, 323
 and icterus gravis, 324
 and influenza, 325

- Pregnancy and leukæmia, 325
 and malaria, 325
 and military tuberculosis, 323
 and mitral stenosis, 324
 and Morton's disease, 315
 and myomata, 325
 and nephritis, 324
 and oedema of cervix, 310
 and osteomalacia, 325
 and parotitis, 325
 and peritonitis, 314
 and pertussis, 325
 and phthisis, 323, 324
 and pleurisy, 323
 and pneumonia, 323
 and pneumothorax, 324
 and polyneuritis gravidarum, 323
 and post-partum hemorrhage, 316
 and ptyalism, 324
 and pulmonary tuberculosis, 323, 326
 and purpura, 325
 and pyelonephritis, 325
 and pyonephrosis, 310
 and rectal cancer, 312
 and retinitis, 325
 and tetany, 323
 and tuberculosis, military, 323
 of the larynx, 308, 323
 pulmonary, 323, 326
 and uterine fibroids, 313
 and Werlhof's disease, 325
 aphasia in, 191
 artificial interruption of, 323
 chlorosis in, 292
 complication of, 308
 dietetic treatment of, 289
 exhaustion in, 292
 extra-uterine, 304
 and appendicitis, 308
 rupture of, 308
 vaginal operation for, 307
 fleshy mole of, 298
 heart, 75
 in phthisical working women, 326
 kidney of, 330
 obesity in, 291
 revaccination in, 295
 tubal, 307
 uterine inertia in, 289
 Presentations, abnormal, 344
 face, 347
 forehead, 347
 mentoposterior, 349
 transverse of head, 353
 Pressure, arterial blood, 56
 in thorax, 29
 of pleural effusion, 35
 venous, 53
 Prognosis of endocarditis, 80
 of syphilis, 169
 Progressive muscular dystrophy, 285
 spinal muscular atrophy, 237
 and neuritis, 270
 Prurigo, 153, 159
 Pruritus, 153, 159
 ani, 154
 linguæ senilis, 154
 Pruritus vulvæ, 154
 Pseudogastric angina, 100
 Pseudohypertrophy, infantile cerebral, 207
 Pseudotabes, 230
 Psoriasis, 116, 155, 158
 and diabetes, 156
 Psychical factor in phthisis, 18
 Ptyalism and pregnancy, 324
 Puberty, cardiac dilatation in, 74
 Puerperal hemorrhage, secondary, 317
 infection, 367, 371, 375
 paralysea, 377
 pyæmia, 375
 sepsis, 371
 classification of, 372
 hysterectomy for, 373
 treatment of, 371
 Puerperium, aphasia in, 191
 examination during, 364
 recurrent myelitis in, 378
 thrombus after, 376
 Pulmonary gangrene, 53
 stenosis, congenital, 69
 tuberculosis, 17
 among insane, 22
 and pregnancy, 323, 324, 326
 and syphilis, 23
 arrhenal in, 27
 cacodylate of sodium in, 26
 dispensaries for, 21
 endemic medication in, 25
 exercise in, 19
 gastric dilatation in, 18
 geosote in, 26
 hæmoptysis in, 27
 ichthyol in, 26
 intratracheal medication in, 28
 joint to first rib, an aid in, 17
 light treatment in, 24
 open-air treatment of, 20
 psychical factor in, 18
 sanatoria for, 20, 22
 sodium cinnamate in, 25
 subcutaneous injections of arsenic in, 25
 temperature in, 18
 thermometer in, diagnosis of, 18
 treatment of, 24
 urea for, 26
 valerianate of guaiacol in, 26
 valves, affections of, 31
 vein, stenosis of, 55
 Pulsatile aorta, 54
 Pulse, irregularity of, 78
 rate and exertion, 78
 wave in aortic regurgitation, 72
 Pulsus bigeminus, 98
 Pupil, Argyll-Robertson, 226
 Pupillary reflexes, 218
 paradoxical, 219
 signs in syphilis, 166
 Purpura in pregnancy, 325
 Purulent pericarditis, 63
 Pyæmia, puerperal, 375
 Pyelonephritis in pregnancy, 325
 Pyocyanus endocarditis, 78
 Pyonephrosis in pregnancy, 310

RABIES, 255

Radiodermatitis, 160

Radiotherapy, 157

in acne, 158

in carcinoma, 159

in eczema, 158

in epithelioma, 159

in favus, 159

in hypertrichosis, 159

in keratoses, 159

in leprosy, 159

in lichen, 159

in lupus erythematosus, 158

vulgaris, 158

in nævus, 159

in parasitic diseases, 159

in prurigo, 159

in pruritus, 159

in psoriasis, 159

in ringworm, 159

in rodent ulcer, 159

in rosacea, 158

in sarcoma, 160

in verruca, 159

Reaction of degeneration in facial palsy, 251

Rectal cancer in pregnancy, 312

Recurrent abortion, 302

Reduplication of heart sounds, 66, 67

Reflex, cornea mandibular, 216

depressor labii inferioris, 216

epilepsy, 275

infraspinatus, 218

lacrymal, 215

malar, 216

ophthalmic, 215

risorius, 216

Strümpell's tibialis, 217

supraorbital, 215

Reflexes, 215

loss of, in transverse lesion of cord, 217

paradoxical, 219

pupillary, 218

Regeneration of nerves, 268

Regurgitation, aortic, 72

mitral, 73

Respiration, slowness of, in tabes, 227

Respiratory gymnastics, 46

Rest in mentoposterior positions, 349

in occipitoposterior positions, 349

treatment in heart diseases, 90

Resuscitation, massage of heart as a means of, 107

Retinitis in pregnancy, 325

Reversals, 274

Rheumatic endocarditis, 78, 82

facial palsy, 257

myocarditis, 75

pericarditis, 63

Rheumatism, acute, tachycardia in, 98

intravenous injections of corrosive sublimate in, 84

Rhinophyma, 116

Rib, joint to the first, 17

Ringworm, 116, 159

Risorius phenomenon, 216

Rod auscultation, 29

Rodent ulcer, 115, 159

Roentgen rays in brain tumor, 182

in thoracic aneurism, 60

Rosacea, 115, 158

Rubber gloves in obstetrics, 340

Rupture of extra-uterine pregnancy, 308

of heart, 105

of right auricle, 106

of uterus, 354

traumatic, of aorta, 54

SANATORIA, 20

cost of, 24

for the insane tuberculous, 22

for the poor, 20

model, 20

objections to, 22

Sarcoma, 160

cutis, 162

of lung, 40

of pia, 185

Scleroderma, 286

Sclerosis, amyotrophic lateral, 250

arterial, 55

disseminated, 232, 245

of aorta, 54

of the spinal cord, 239

posterolateral, 239

visceral, 55

Senile arterial overpressure, 57

Sensory aphasia, 192

pure, 193

changes in hemiplegia, 168

tracts in the spinal cord, 219

Sepsis, puerperal, 371

classification of, 372

hysterectomy for, 373

Septic endocarditis, injections of silver salts for, 81

Serotherapy, 85

Serous pleurisy, 33

Serum treatment of malignant endocarditis, 81

Silver salts, injection of, for endocarditis, 81

Skin, actinomycosis of, 116

atrophy of, 119

calcification of, 127

diseases, 109

diabetic, 132

in pregnancy, 323

hypomycetic granuloma of, 137

sarcoma of, 162

Skull, fracture of base of, 204

Smallpox, 295

and syphilis, 168

Sodium cacodylate in phthisis, 26

cinnamate, intravenous injections of, 25

Spasm, facial, 284

intention, 274

of eyelids in chorea, 280

muscular, 282

Spasmodic torticollis, 281

Spastic spinal paralysis, 240

Sphinx, facies of the, 285
 Spinal caries, 250
 cord, arteriosclerosis of, 253
 diseases of, 219
 hemorrhage into, 236
 in the young, 254
 sclerosis of, 239
 sensory tracts in, 219
 hemorrhagic pachymeningitis, 252
 injection of tropacocaine in eclampsia, 340
 localization of nerves, 269
 muscular atrophy, progressive, 237, 270
 and neuritis, 270
 pachymeningitis, external, 214
 paralysis, spastic, 240
 syphilis, 233
 tumor, 242
 Spine, fracture of, 257
 Splenitis, tuberculous endocarditis and, 80
 Spontaneous pneumothorax, 32
 Staphylococcus bronchitis, 43
 in empyema, 38
 Status lymphaticus with enlarged thymus, 107
 Stenosis, aortic, 71
 mitral, 70, 73
 and pregnancy, 324
 presystolic murmur of, 68
 of aorta, 53
 of pulmonary vein, 55
 of vena cava, superior, 55
 pulmonary, congenital, 69
 Stereognosis, 183, 198
 Stereognostic perception centre, 183
 Stomach, pain in, 271
 Streptococcus bronchitis, 43
 in empyema, 38
 infection, 367
 formalin in, 367-371
 Strümpell's tibialis phenomenon, 217
 Strychnine in mentoposterior positions, 349
 in occipitoposterior positions, 349
 Subclavian vessels, arteriovenous aneurism of, 59
 Subphrenic abscess, 37
 Suicide and syphilis, 172
 Sulphonal neuritis, 266
 Supraorbital reflex, 215
 Surgery, obstetric, 340
 Surgical emphysema, 17
 Sycosis, 116
 Symphysiotomy, 361
 Syphilis, 23, 164
 and apoplexy, 172
 and cancer, 172
 and circulatory diseases, 172
 and circumcision, 164
 and dementia, 172
 and eczema, 167
 and smallpox, 168
 and suicide, 172
 and tabs, 172, 221
 and tuberculosis, 23, 172
 diagnosis of, 166

Syphilis, duration of contagion in, 169
 incubation period of, 168
 instructions to cases of, 170
 intravenous treatment of, 176
 in women, 167
 itching in, 167
 marriage and, 169
 mucous patches in, 166
 open-air treatment of, 23
 organism of, 170
 prognosis of, 169
 pupillary signs in, 166
 sequelæ of, 172
 spinal, 233
 tertiary, 173
 treatment of, 174
 Syphilitic aortitis, 54
 meningitis, 378
 meningomyelitis, 233
 Syphilitics, instructions to, 170
 Syringomyelia, 236
 and leprosy, 236
 and Morvan's disease, 236

TABES dorsalis, 54, 220
 aorta in, 54
 Argyll-Robertson pupil in, 226
 arthropathies in, 227
 early signs of, 224
 heart in, 54
 in the young, 228
 involuntary movements in, 226
 multiple neuritis and, 231
 muscular atrophy in, 228
 optic atrophy in, 221
 pseudo-, 230
 slowness of respiration in, 227
 statistics on, 220, 223
 symptoms of, 221, 223
 syphilis and, 172, 221
 Tache blanche test, 58
 Tachycardia, 97
 in acute rheumatism, 98
 paroxysmal, 97
 Tachypnoea, hysterical, 52
 Tarnier's basiotribe, 362
 forceps, 357
 Taste fibres, source of, 263
 Telangiectasis, 114
 Temperature in phthisis, 18
 Testicle, pain in, 272
 Tetany, 216
 and pregnancy, 323
 Therapeutic results of actinotherapy, 113
 Therapeutics, intravenous, 82
 Thermometer in diagnosis of phthisis, 18
 Thoracic aneurism, 59
 fluoroscope in, 60
 humming-top murmur in, 59
 inspection in, 60
 pulsation of chest wall in, 60
 rhythmic jerking of head in, 61
 pain, 29
 Thoracoplasty, 40
 Thorax and lungs, physical examination of, 28

- Thorax, diseases of, 17
 pressure to, as an aid to diagnosis, 29
 Thrombus after puerperium, 376
 Thymus, and status lymphaticus, 106
 sudden death in cases of enlarged, 106
 Thyroid extract for eclampsia, 332
 inadequacy a cause of eclampsia, 332
 Tic douloureux, pathology of, 264
 Tidal percussion, 29
 Torticollis, atropine for, 281
 spasmodic, 281
 Toxæmic dropsy in children, 58
 Toxic neuritis, 266
 Trauma a cause of tabes, 224
 of heart, 105
 Treatment, dietetic, of pregnancy, 289
 of abscess of breasts, 365
 of acne, 109, 115, 158
 of actinomycosis, 116
 of after-coming head, 349
 of alopecia, 119
 areata, 114
 of aneurism, 61
 of angina pectoris, 105
 of anthrax, 119
 of arrhythmia, 98
 of arteriosclerosis, 55
 of asphyxia neonatorum, 381
 of asthma, 50
 of blastomycosis, 123
 of breech presentations, 349
 of bronchi, 41
 of bronchiectatic abscess, 40
 of bronchitis, 44
 of bronchopneumonia, 41, 42
 of bubo, 125
 of burns, 116
 of carbuncle, 125
 of carcinoma, 115, 127, 159
 of cardiac pain, 102
 of catarrh, 44
 of cervicitis, 309
 of chlorosis in pregnancy, 292
 of congenital heart affections, 69
 of contracted pelvis, 352
 of cutaneous carcinoma, 127
 of diabetic skin diseases, 132
 of eclampsia, 326
 of ectopic pregnancy, 305, 307
 of eczema, 116, 134, 158
 of empyema, 38
 of endocarditis, 81
 of endocervicitis, 309
 of epilepsy, 277
 of epithelioma, 115, 159
 of erysipelas, 136
 of exhaustion in pregnancy, 292
 of face presentations, 347
 of family periodic paralysis, 280
 of favus, 116, 159
 of forehead presentations, 347
 of hæmoptysis, 27
 of hay fever, 46
 of keloid, 143
 of keratosis, 159
 of kraurosis ani, 142
 of leprosy, 145, 159
 Treatment of leucoplakia, 148
 of lichen, 159
 of locomotor ataxia, 229
 of lupus erythematosus, 115, 150, 159
 vulgaris, 113, 158
 of melæna, 384
 of mentoposterior positions, 349
 of nævus, 114, 151, 159
 of noma, 152
 of obesity in pregnancy, 291
 of occipitoposterior positions, 345, 349
 of œdema of cervix, 310
 of parasitic diseases, 116, 159
 of pericarditis, rheumatic, 63
 of pityriasis versicolor, 116
 of placenta prævia, 319-323
 of pleural effusions, 35
 of polyhydramnios, 299
 of post-partum hemorrhage, 316
 of prurigo, 153, 159
 of pruritus, 153, 159
 of psoriasis, 116, 156, 159
 of puerperal hemorrhage, 318
 infection, 367
 pyæmia, 315
 sepsis, 371
 of puerperium, 364
 of pulmonary tuberculosis, 24
 of pulsatile aorta, 54
 of rectal cancer in pregnancy, 312
 of rheumatic endocarditis, 82
 pericarditis, 63
 of rhinophyma, 116
 of ringworm, 116, 159
 of rodent ulcer, 115, 159
 of rosacea, 115, 158
 of sarcoma, 160
 of senile overpressure, 57
 of streptococcus infection, 367
 of sycosis, 116
 of syphilis, 23, 174
 of tabes, 229
 of telangiectasis, 114
 of torticollis, 281
 of tuberculosis cutis, 114
 pulmonary, 24
 of ulcer tropicum, 116
 of umbilical cord, 380
 of verruca, 159
 of vertex presentations, 341
 of wounds, 116
 surgical, of puerperal sepsis, 371
 Tricuspid affections, 71
 Tropacocaine in eclampsia, 338
 Trophoneurosis, 287
 Truncsek's serum in arteriosclerosis, 56
 Tubal pregnancy, 304
 Tubercle and cancer, incompatibility of, 85
 Tuberculosis cutis, 114
 miliary, 323
 of larynx, 308, 323
 pulmonary, 17
 among insane, 22
 and pregnancy, 323, 324, 326
 and syphilis, 23, 72
 arrhenal in, 27

- Tuberculosis, pulmonary, cacodylate of
 sodium in, 26
 dispensaries for, 21
 endermic medication in, 25
 exercise in, 19
 gastric dilatation in, 18
 geosote in, 26
 hæmoptysis in, 27
 ichthyol in, 26
 intratracheal medication in, 28
 joint to first rib an aid in, 17
 light treatment in, 24
 open-air treatment of, 20
 psychical factor in, 18
 sanatoria for, 20, 22
 sodium cinnamate for, 25
 subcutaneous injections of arsenic in, 23
 temperature in, 18
 thermometer in diagnosis of, 18
 treatment of, 24
 urea for, 28
 valerianate of guaiacol for, 26
 syphilis and, 72
 Tuberculous endocarditis and splenitis, 80
 laryngitis and pregnancy, 308
 myelitis, 257
 pericarditis, 63
 pleurisy, 31, 33
 Tubular vision, 273
 Tumor, brain, 179, 353
 dental engine for, 184
 myxœdema a sign of, 184
 osteoplastic method for, 183
 paralysis of conjugate movement in, 189
 Roentgen rays in, 182
 in interpeduncular space, 180
 of corpora quadrigemina, 187
 of corpus callosum, 186
 of fourth ventricle, 180
 of frontal lobe, 185
 of nerves, 259
 of third ventricle, 188
 spinal, 242
 Tumors, cerebral, and pregnancy, 353,
 hepatic, and pregnancy, 324
 of the pleura, 31
 Typhoid fever, ataxia from, 232
 neuritis after, 265,
 pleurisy, 33
- U**LCUS tropicum, 116
 Umbilical cord, ligation of, 380
 treatment of, 380
 hemorrhage, 384
- Unguentum Credé, 84
 Urea treatment of phthisis, 26
 Uterine fibroids in pregnancy, 313
 inertia, 289
 myoma, myofibrosis cordii and, 75
 Uterus, rupture of, 354
- V**ACCINATION during pregnancy, effect on child, 295
 Vaginal use of elastic bags, 340
 Vagus nerves, paralysis of, 262
 Valerianate of guaiacol in phthisis, 26
 Valve, aneurism of, 61
 mitral, muscular insufficiency of, 72
 Valves, heart, effects of strain on, 76
 pulmonary, affections of, 71
 Valvular affections of heart, 70
 angina, 103
 aortic, defects, 74
 Variola. *See* Smallpox.
 Vasomotor angina, 104
 centres of heart, 93
 nerves of heart, 93
 Vein, pulmonary, stenosis of, 55
 Veins, gas injections into, 86
 oxygen injections into, 86
 Vena cava, superior, rupture of aortic aneurism into, 61
 stenosis of, 55
 Venous hum and the blood count, 68
 over hepatic area, 69
 pressure, 58
 Ventricle, calcification of, 64
 fourth, tumor of, 180
 paracentesis of right, 65
 third, tumor of, 188
 Verruca, 159
 Version in contracted pelvis, 352
 perforation and, 363
 Vertex presentations, 344
 Vesicular murmur, seat of, 28
 Visceral lesions, pain from, 271
 Vision, tubular, 273
 Volitional equilibrium, 231
 Vomiting, fecal, in epilepsy, 275
- W**ASSMUTH'S inhalation apparatus, 44
 Werlhof's disease and pregnancy, 325
 Whooping-cough. *See* Pertussis.
 Women, syphilis in, 167
- X**-RAYS. *See* Roentgen rays.





